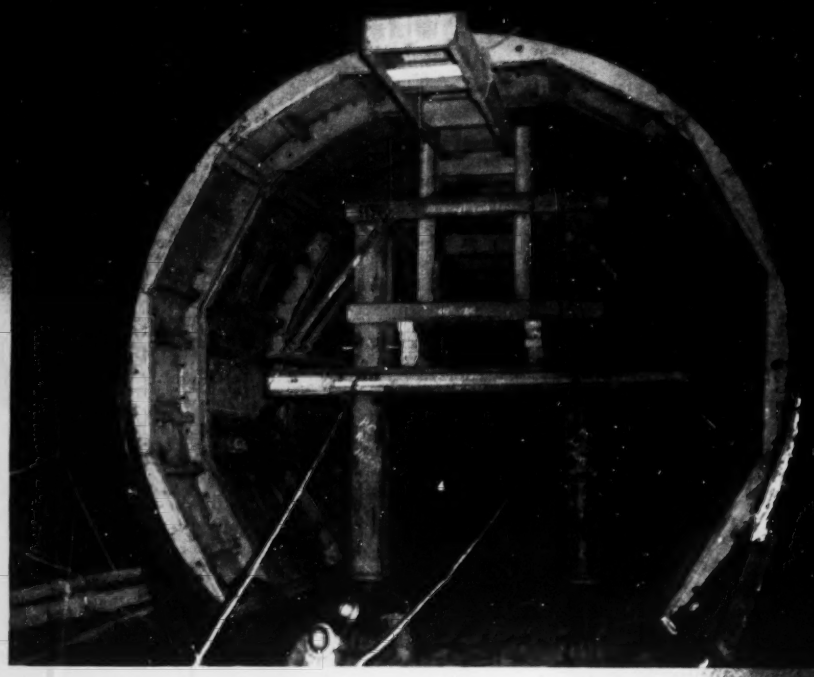
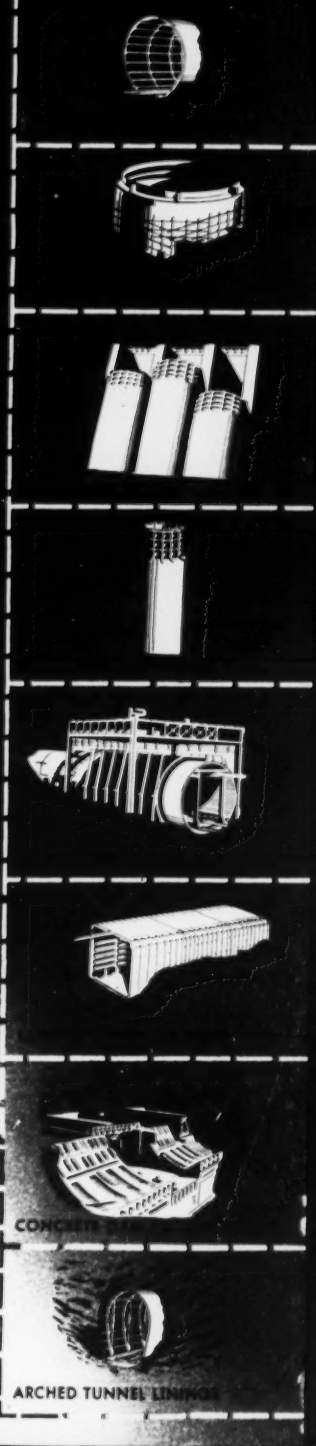
ENGINEERING NEWS-RECORD

A McGRAW HILL PUBLICATION

Highball Schedule?





let HORTON Steel Forms help meet it

The Yale Dam at Yacolt, Washington is being highballed to completion. Construction of a 4,000,000-cu. yd. earthfill dam and power house in one year is the goal of Ebasco Services Inc., Agent and Design Engineer, and Morrison-Knudsen Company, Inc., builder of this $27,000,000 hydro-electric project on the Lewis River.

The Horton steel form shown in the above view was built for the Morrison-Knudsen Company, Inc., and used for pouring tunnel lining at the dam. Practical arrangement of hinges, ratchets, jacks and other important operating details facilitate quick setting and alignment and easy stripping that assure speedy operation.

Horton Steel Forms are engineered and built *for the job*. Whether for sewer lines or outfalls . . . railroad or vehicular tunnels . . . hydro-electric or water supply tunnels . . . Chicago Bridge & Iron Company will design and build the forms you need and do it right.

Bring your steel form problems to our nearest office. Take advantage of Chicago Bridge & Iron Company's more than 64 years of steel plate experience.

CHICAGO BRIDGE & IRON COMPANY

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Cleveland, 15 . . . . . 2204 Midland Bldg.
Detroit, 26 . . . . . 1514 Lafayette Bldg.
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Los Angeles, 17 . . . 1523 General Petroleum Bldg.
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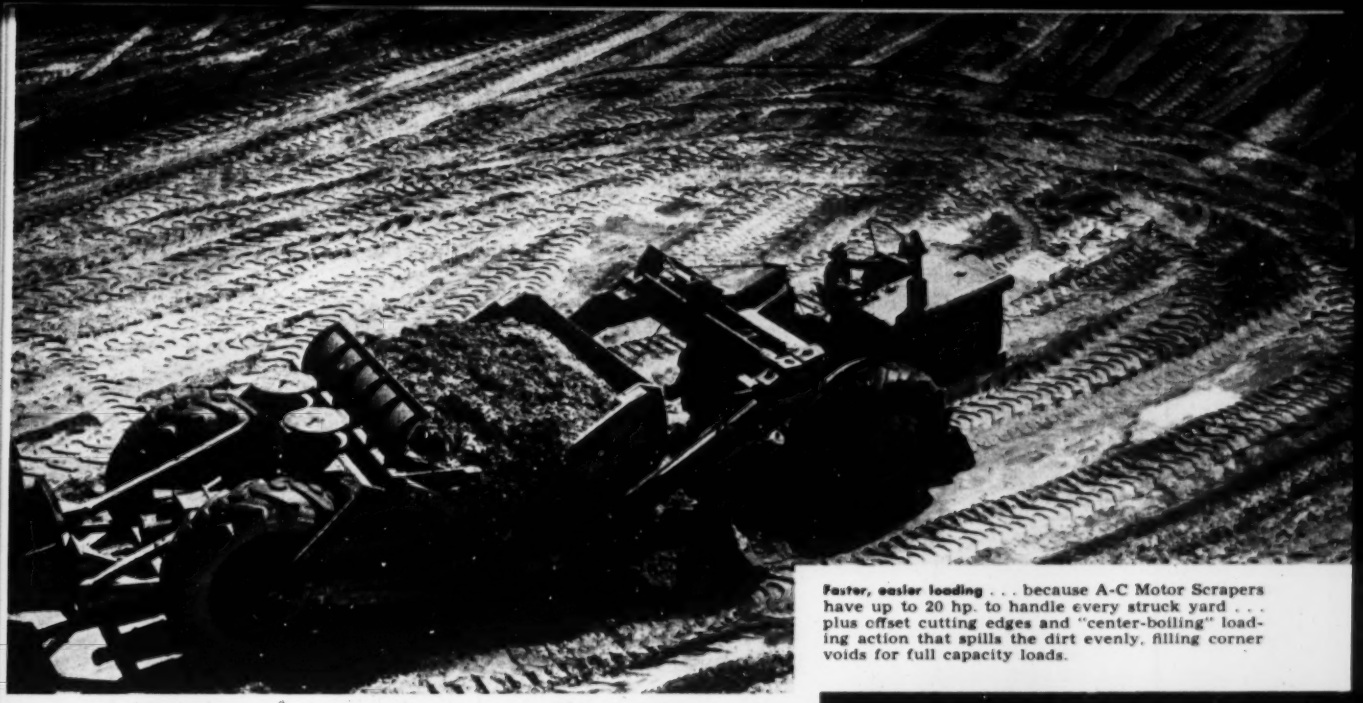
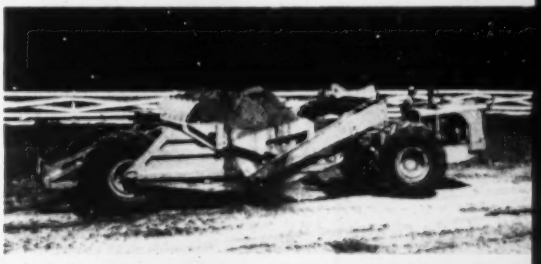
Seattle, 1 . . . . . 1325 Henry Bldg.
Tulsa, 3 . . . . . 1606 Hunt Bldg.



Faster, easier loading . . . because A-C Motor Scrapers have up to 20 hp. to handle every struck yard . . . plus offset cutting edges and "center-boiling" loading action that spills the dirt evenly, filling corner voids for full capacity loads.

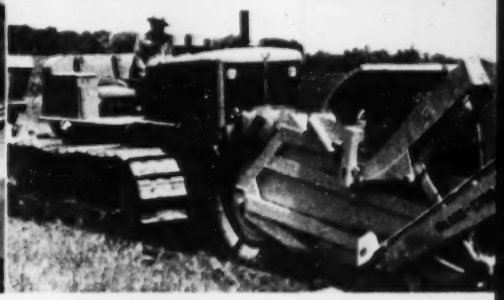
How Allis-Chalmers Motor Scrapers help Cut Cost per Yard by Cutting Time per Yard



High-speed hauling. The power behind the TS-300 teams up with big, traction-type tires that gear it to the road . . . move capacity loads at 22.5 mph. And operating clearance of 20 in. helps keep it from hanging up on rutted haul roads.

Positive, forced ejection . . . eliminates wasteful circling or other time-consuming methods of removing the load. Allis-Chalmers' patented forced-ejection system plus high apron lift *bulldozes* dirt out of the bowl fast every trip . . . without extra wear and tear on power control unit cables and clutches.

Easy operation. From foam rubber seat to finger-tip control, shock-free hydraulic steering and full visibility, a TS-300 operator has every available help for safe, sure, speedy work. Balanced weight distribution and low center of gravity make A-C Motor Scrapers easy to maneuver even at top speed.



A dirt-moving "package" that makes every second count. The powerful HD-20 torque converter tractor is an ideal teammate for the TS-300. It synchronizes to scraper speed at contact . . . automatically loads at fastest speed conditions permit with less strain on operator and equipment . . . gives scraper an extra fast start to the fill.

TS-300 MOTOR SCRAPER
14 cu. yd. struck capacity
18 cu. yd. heaped capacity
280 hp. Buda diesel or
275 hp. Cummins diesel

TS-200 MOTOR SCRAPER
10 cu. yd. struck capacity
13 cu. yd. heaped capacity
176 hp. Buda diesel or
165 hp. Cummins diesel

Your nearby A-C dealer will be glad to give you more yardage-boosting facts about job-tested, *job-proved* Motor Scrapers. He can also tell you where you can see them at work and talk to the men who own and operate them. You owe it to yourself to call or stop in soon.

THE FINEST LINE ON EARTH

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE 1, U. S. A.

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Publisher

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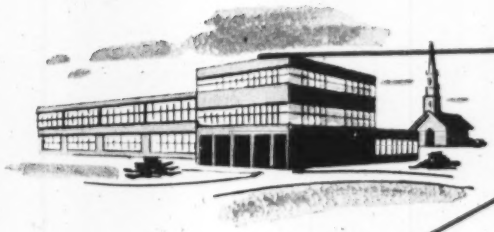
To keep pace with modern standards of living . . .

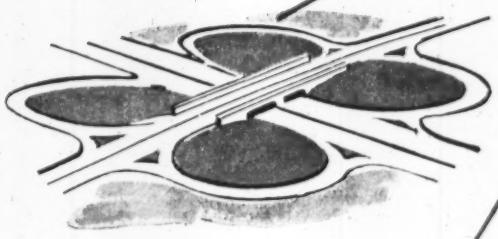


There is tremendous need for all kinds of construction

institutions, buildings

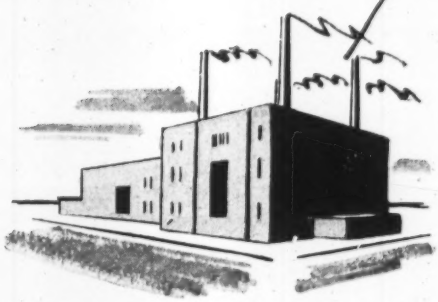
highways

basic community facilities



The Construction Industry has the immediate capacity

to build these essential projects wherever needed



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from centralizing full responsibility in the General Contractor of established reliability

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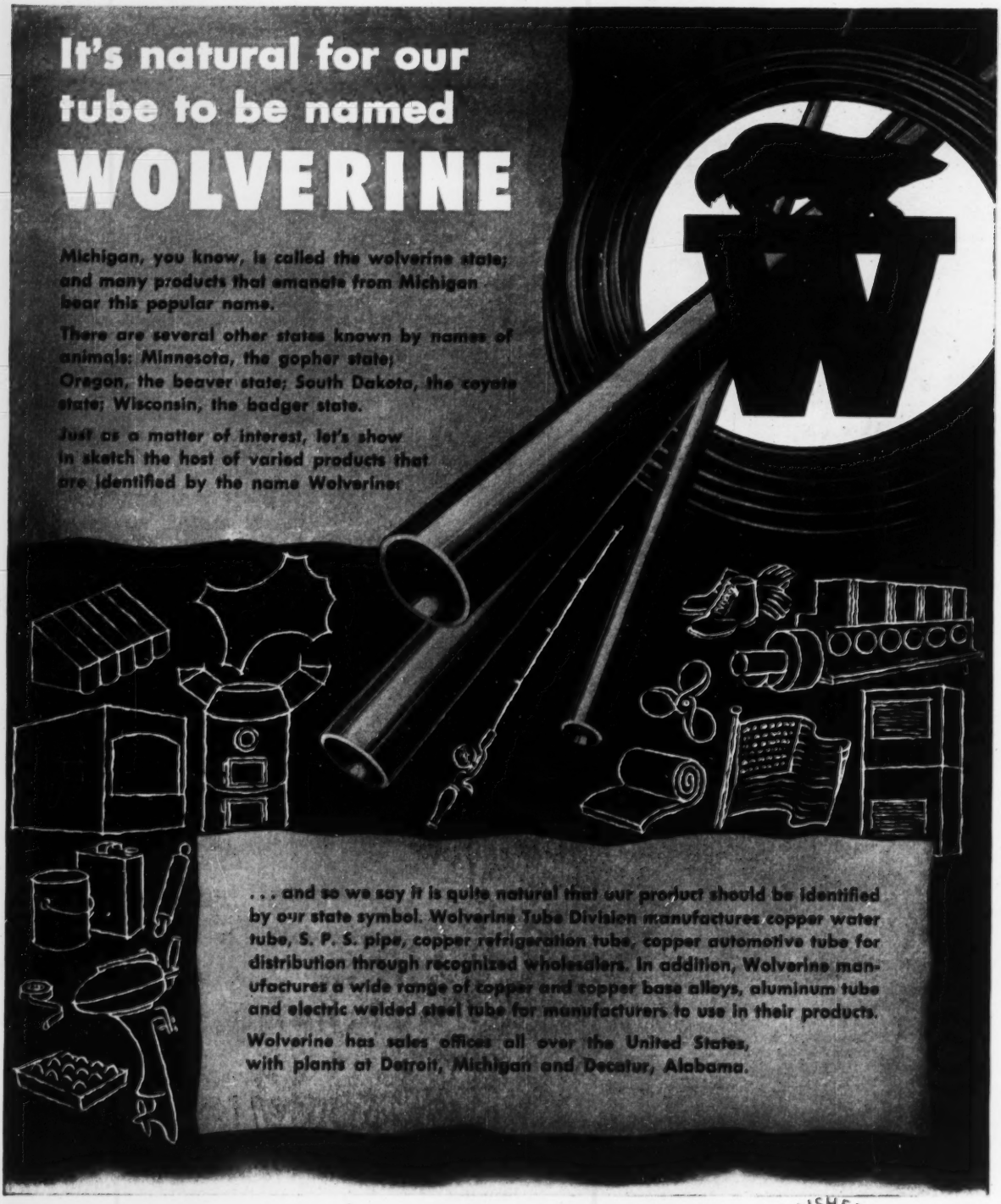
America Progresses Through Construction . . . Construct by Contract!

It's natural for our tube to be named WOLVERINE

Michigan, you know, is called the wolverine state; and many products that emanate from Michigan bear this popular name.

There are several other states known by names of animals: Minnesota, the gopher state; Oregon, the beaver state; South Dakota, the coyote state; Wisconsin, the badger state.

Just as a matter of interest, let's show in sketch the host of varied products that are identified by the name Wolverine:



. . . and so we say it is quite natural that our product should be identified by our state symbol. Wolverine Tube Division manufactures copper water tube, S. P. S. pipe, copper refrigeration tube, copper automotive tube for distribution through recognized wholesalers. In addition, Wolverine manufactures a wide range of copper and copper base alloys, aluminum tube and electric welded steel tube for manufacturers to use in their products.

Wolverine has sales offices all over the United States, with plants at Detroit, Michigan and Decatur, Alabama.

WOLVERINE TUBE DIVISION
of CALUMET & HECLA, INC.

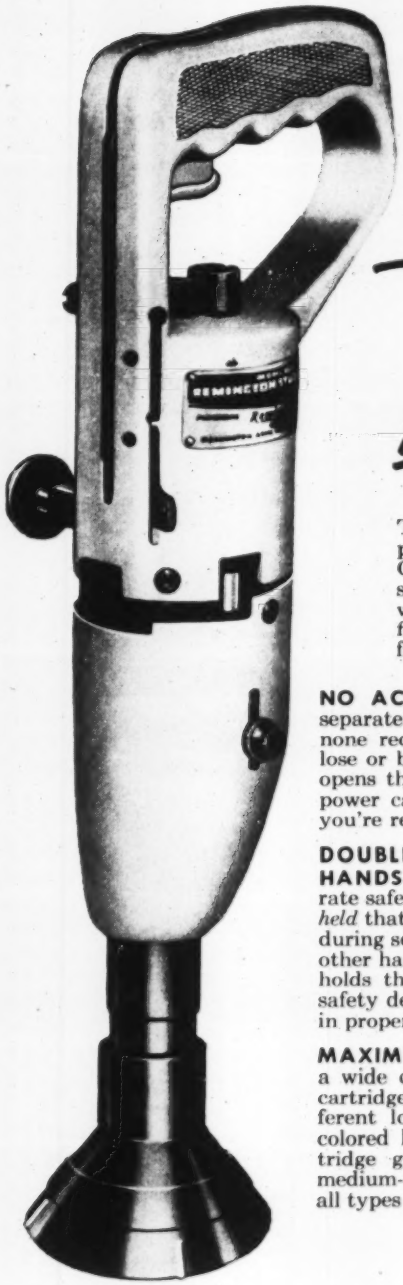
ESTABLISHED 1916

Manufacturers of Tubing Exclusively

1465 CENTRAL AVENUE • DETROIT 9, MICHIGAN

Buy from Your Wholesaler

MODEL 450 REMINGTON STUD DRIVER



—the ONLY powder-actuated fastening tool with ALL these advantages—

The Model 450 Remington Stud Driver sets up to 5 fastening studs per minute—a speed unmatched by other powder-actuated tools. Completely self-powered, this amazing tool fastens steel or wood structural pieces to concrete or steel surfaces in seconds. Its light weight—only 5 1/2 pounds—makes it ideal for use overhead or in confined spaces. Check these other *exclusive* Remington Stud Driver features:

NO ACCESSORIES REQUIRED. No separate parts needed to control power, none required for loading—nothing to lose or break. Just a twist of the wrist opens the Model 450. Insert stud and power cartridge as a unit...close and you're ready! Whole job takes seconds.

DOUBLE-SAFE—REQUIRES *BOTH* HANDS FOR OPERATION. A separate safety lever must be depressed and *held* that way with one hand before and during squeezing of the trigger with the other hand. Safe, two-handed operation holds the tool steady. Two *additional* safety devices prevent operation except in proper fastening position.

MAXIMUM POWER RANGE. You get a wide choice of power in Remington cartridges. They're available in six different loads, each clearly marked by colored heel caps. The 32 caliber cartridge gives you extra power in this medium-duty tool... helps you speed all types of fastening jobs.

ARROW-STRAIGHT DRIVING—PERFECT GAS SEAL. Long heel cap on all Remington cartridges provides perfect gas seal... gives the Model 450 more power. Assures controlled, consistently straight driving.

FAST, POSITIVE EJECTION. Exclusive ejector snaps fired case out of tool instantly—no fumbling, no tools needed.

* * *

Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest sporting arms manufacturer.*

NEW, FREE BOOKLET shows you a hundred different ways the Model 450 Remington Stud Driver can speed *your* construction fastening. Packed with illustrations, it tells you where and how this tool can save time, reduce fatigue and cut costs. Send in the coupon below for your copy.

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Remington

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Remington Arms Company, Inc.
939 Barnum Ave., Bridgeport 2, Connecticut

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Position _____

Firm _____

Address _____

City _____ *State* _____

Dress up your skyline

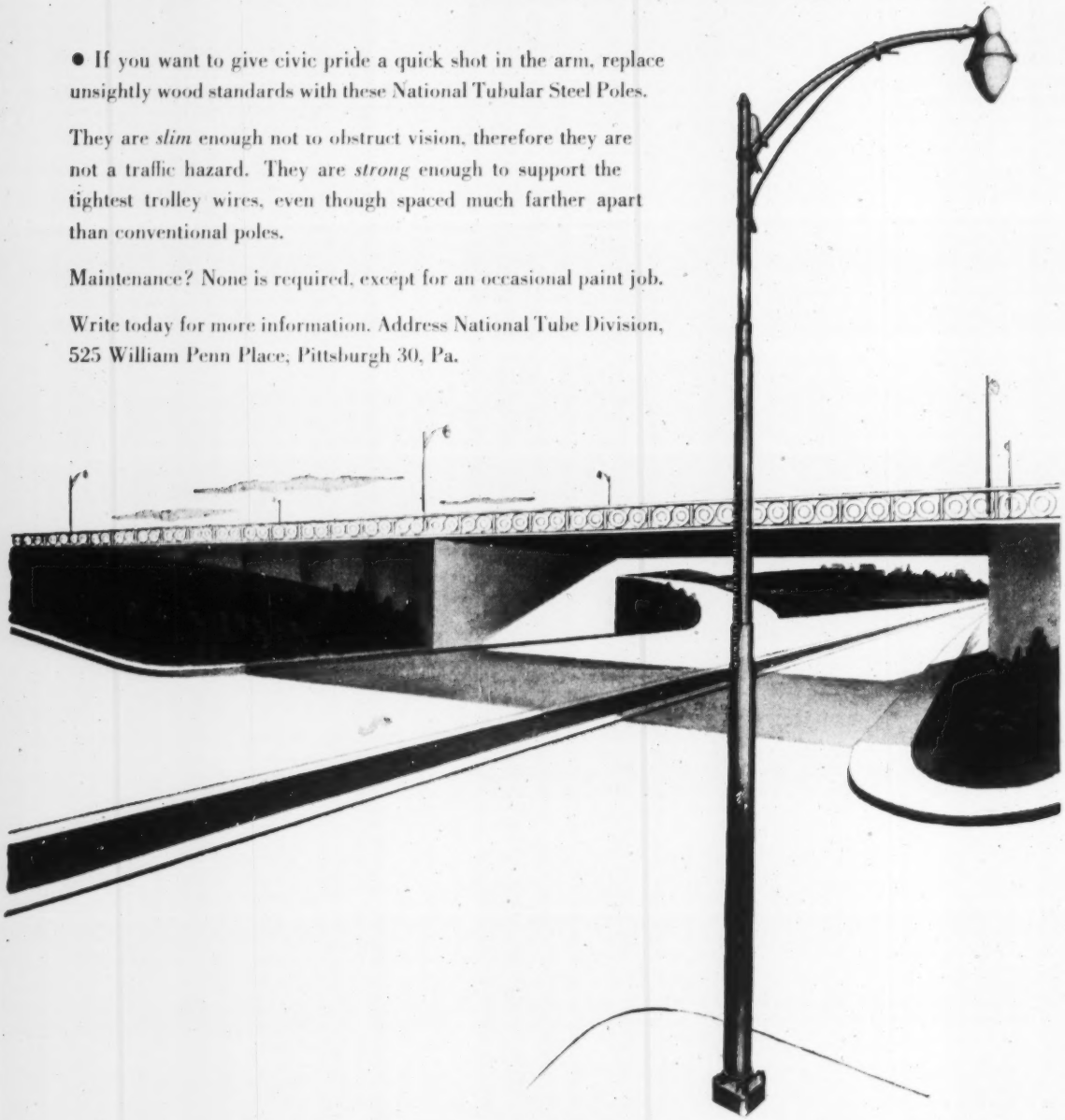
with these smooth steel poles

● If you want to give civic pride a quick shot in the arm, replace unsightly wood standards with these National Tubular Steel Poles.

They are *slim* enough not to obstruct vision, therefore they are not a traffic hazard. They are *strong* enough to support the tightest trolley wires, even though spaced much farther apart than conventional poles.

Maintenance? None is required, except for an occasional paint job.

Write today for more information. Address National Tube Division, 525 William Penn Place, Pittsburgh 30, Pa.



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UNITED STATES STEEL CORP., PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S NATIONAL *Tubular* STEEL POLES

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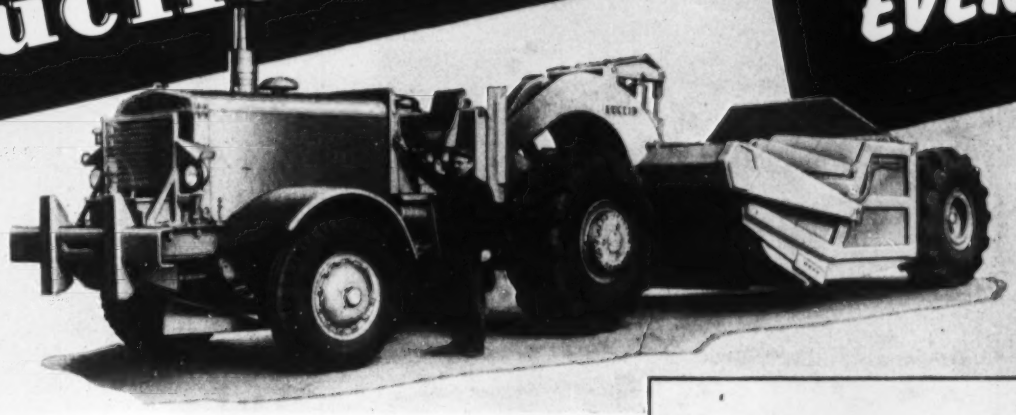
UNITED STATES STEEL

NOW... Euclid Scrapers ...BETTER THAN EVER!



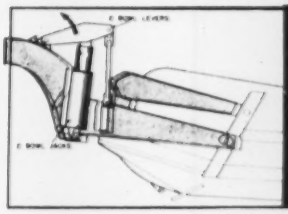
CHECK THESE OUTSTANDING FEATURES:

- Lever actuated independent control of bowl lift, apron and ejector
- Only 12 feet of cable
- 10 speed transmission
- Loaded top speed 28 m.p.h.
- Completely interchangeable jacks
- Reversible and interchangeable cutting blades
- Simple, compact hydraulic assembly.

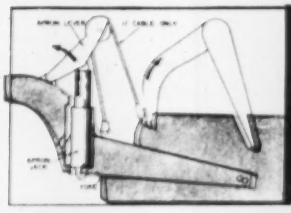
THIS improved lever-type 15.5 yd. Euclid Scraper sets a completely new standard for scraper design, performance and serviceability. It has many profit making features that are not available in any other scraper on the market.

For example, the 10 speed transmission means faster average speeds and more pay trips per hour. Lever action using interchangeable hydraulic jacks eliminates all but 12 feet of cable. A new simplified control system consists of internally mounted pump, valve and tank in one compact assembly—there are no suction hoses and complicated connections. The planetary drive axle—the same model used in thousands of Rear-Dump Euclids—is easy to service and has proved its efficient long life performance on hundreds of tough jobs.

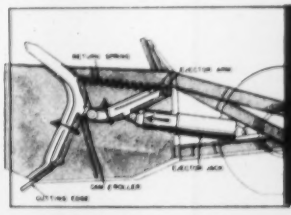
Yes, "Euc" Scrapers are better than ever—in performance, production, maintenance cost and job availability. See your Euclid distributor for all the facts that add up to less down time, lower costs and more profit.



High Bowl Lift



Fast Apron Opening



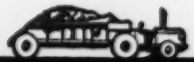
Positive Power Ejector

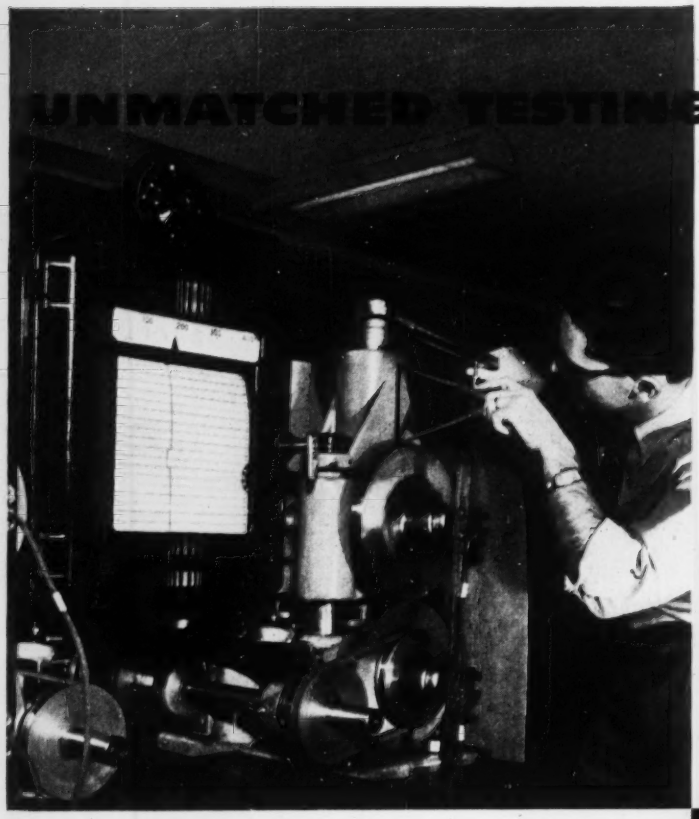
The EUCLID ROAD MACHINERY Co.

CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID CODE: BENTLEY

EUCLID

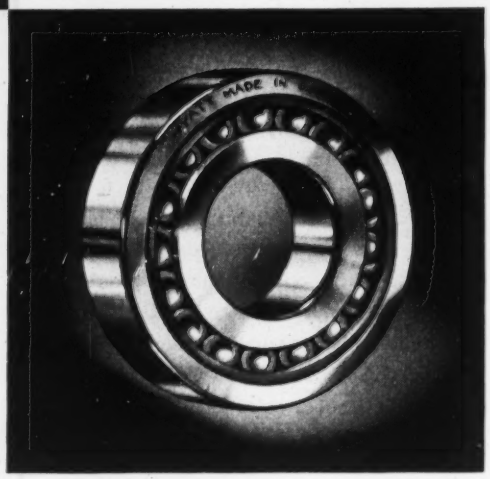




UNMATCHED TESTING FACILITIES...

one of many reasons for Hyatt leadership!

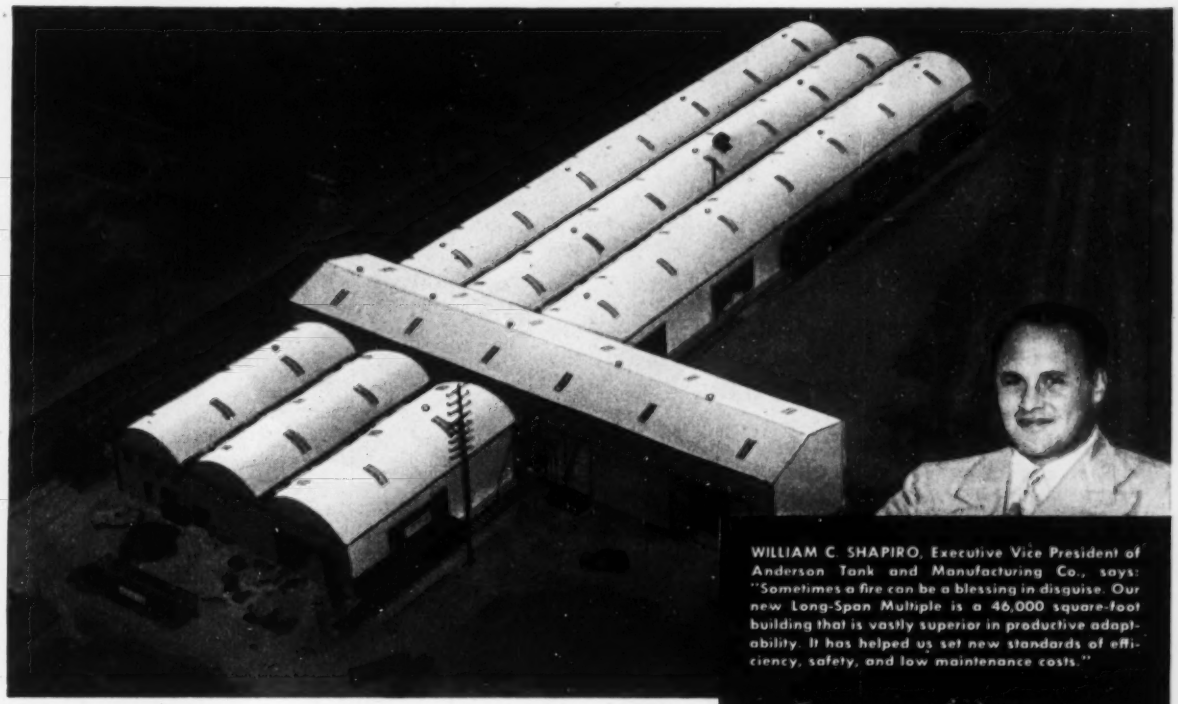
In testing laboratory or manufacturing plant, Hyatt's facilities are second to none. Continuing research in methods and materials, and exacting inspection with the finest in modern equipment, has made the Hyatt name a synonym for "highest quality." That's why Hyatt Roller Bearings are so widely used in design applications involving radial loads. Design engineers know that Hyatt bearings have been "performance-proved" for smoother, trouble-free operation and longer life. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



HYATT ROLLER BEARINGS

Plant Destroyed by Fire . . .

Here's How a Manufacturer Restored Production in a Hurry with a LONG-SPAN MULTIPLE BUILDING



WILLIAM C. SHAPIRO, Executive Vice President of Anderson Tank and Manufacturing Co., says: "Sometimes a fire can be a blessing in disguise. Our new Long-Span Multiple is a 46,000 square-foot building that is vastly superior in productive adaptability. It has helped us set new standards of efficiency, safety, and low maintenance costs."

When its old plant burned to the ground last year, the Anderson Tank and Manufacturing Company, of Flint, Mich., needed a fast replacement to meet production schedules and fill existing orders as soon as possible.

Here are the reasons why Anderson Tank chose a Long-Span Multiple

- **The cost per square foot was about half that of conventional industrial construction.**
- **Quick occupancy of the new building was possible because of fast erection. All parts are factory-fabricated, pre-punched for easy connection, and shipped ready for assembly. No priority was necessary.**
- **Non-combustible materials of the Long-Span Multiple meant a reduction in the cost of fire and work-interruption insurance.**
- **Ceiling height of 29 feet helps prevent concentration of toxic gases.**
- **Clear height under spans of 18 feet, and 35½ x 40-foot bays between vertical columns, permit use of large fork trucks and heavy machinery necessary in production operations.**
- **Maintenance costs are relatively low.**
- **The Long-Span Multiple can be expanded easily should additional space be needed.**

If you are a manufacturer in need of additional buildings, it will pay you to get the time-and-money-saving facts about the Stran-Steel Long-Span Multiple. Write us today.

Ample floor space in the Long-Span Multiple permits completely integrated production. Ceiling height of 29 feet promotes good ventilation—35½ x 40-foot bays allow great flexibility in work layout and provide ample room for heavy machinery.

GREAT LAKES STEEL CORPORATION
Stran-Steel Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

Yes, I would like to know more about the new Long-Span Multiple.

Name_____

Title_____

Firm_____

Address_____ M

Tests Prove

CLAY PIPE is detergent-proof!

Of course it is. Clay pipe is chemically inert. Detergents can't weaken it, soften it, or separate its particles. All they can do is keep it clean.

Comparative laboratory tests show that *other* types of sewer pipe may fail, however, in contact with detergents. One non-clay material failed after only 500 hours in a *one-percent solution* of a popular detergent at "dishwater temperature." A lab technician was able to pull it apart and shred it with his fingers.

Important? You bet it is! Hundreds of thousands of gallons of detergent solutions pour into a city's sewers every day. There's no *safe* substitute for Vitrified Clay Pipe. It's the *only* chemically inert pipe . . . the only pipe that can't wear out. It stays rock-hard . . . glass-smooth . . . die-straight, year after year in the ground. *And it's guaranteed for half a century!*

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READER COMMENT

Artificial shortage?

Sir: Your issue of Feb. 26 has two articles that I feel need further amplification. You state (p. 26) that there is a shortage of civil engineer graduates and (on p. 17) the average starting salary offer for graduates was $364 per month.

I have a B.S. in Architectural Engineering from one of the best colleges in the country (Washington University, St. Louis, Mo.), where my average marks were among the highest in my class, and nearly two years of design and field experience; yet I am earning considerably less than the reported offers for beginners. I have made many applications for jobs in various parts of the country but have failed to receive offers of salaries higher than I am now receiving. Which firms were offering graduates such high salaries?

After having observed that engineers frequently are paid far less than foremen, I have decided that if by summer I do not find a job that offers a decent salary I will give up engineering entirely.

Can it be that the shortage of engineers is an artificial one due to relatively low salaries? Would this shortage disappear if engineering salaries were made more commensurate with the skills and training required?

YOUNG ENGINEER
Tulsa, Oklahoma

For partial prestress

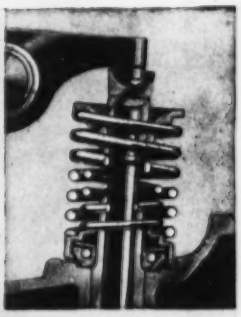
SIR: In ENR Jan. 15, p. 10, A. M. Lount questioned the advisability of partial prestressing. Having discussed this subject with P. W. Abeles during his recent visit, I can shed some light on this problem.

There has never been too much favor to over-reinforcing, even for conventional reinforced concrete beams, because this would create brittle failures in the concrete with little or no warning. This same attitude should prevail for prestressed beams also, particularly in cases of structures that are exposed to sudden shocks. Partially prestressed beams exhibit considerable resilience and thus are desirable for structures exposed to occasional heavy loadings, such as highway bridges and frames subjected to earthquake shocks.

In present practice, deflections are anticipated and partly eliminated by eccentric prestressing. Inasmuch as the sum of the horizontal forces must

(*Continued on page 15*)

Engineered to Excel ..CONTINENTAL RED SEAL POWER



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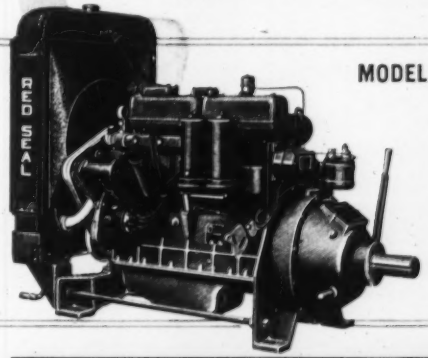

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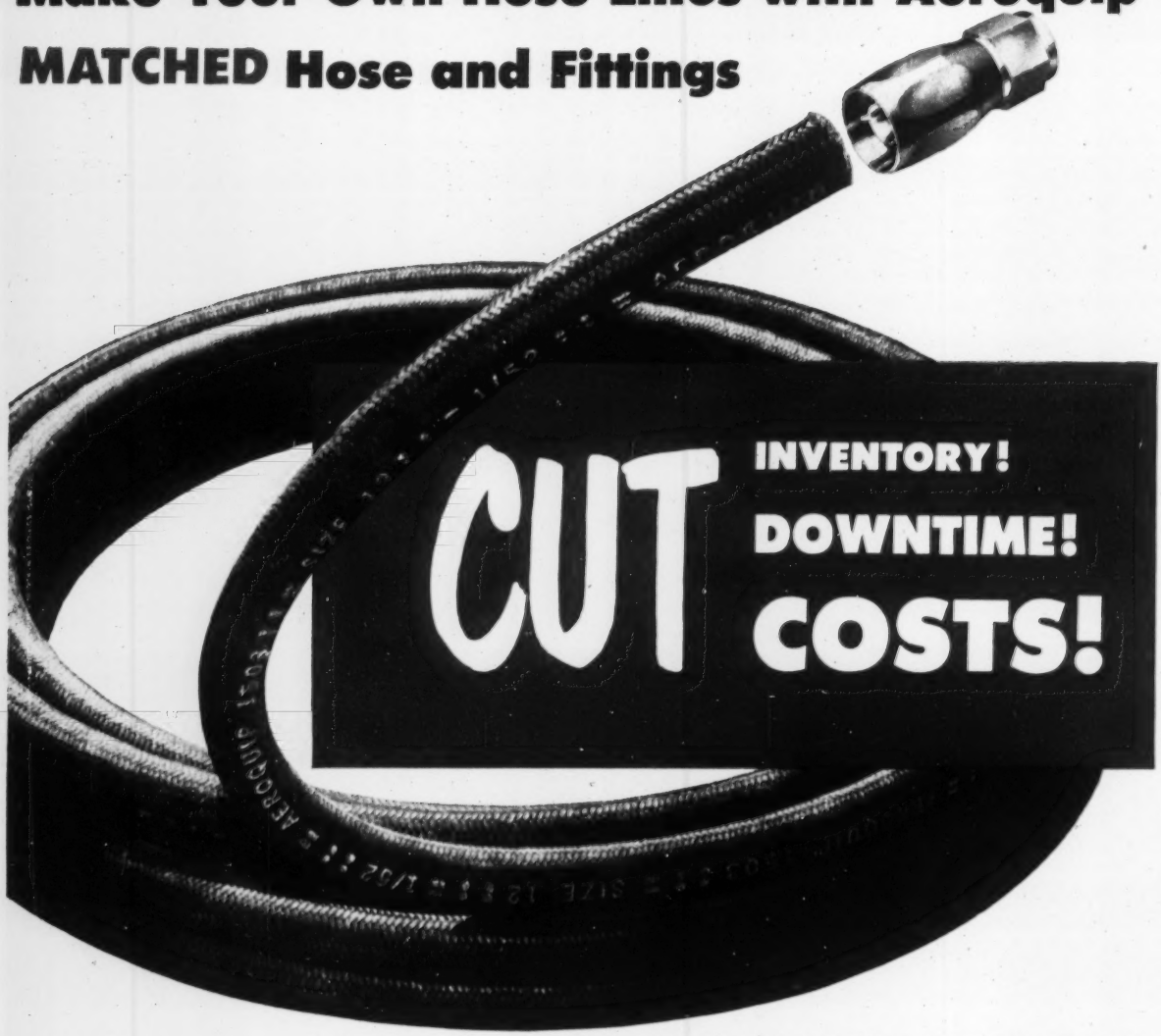

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be equal to zero, a reduction of the cable stress calls also for a diminished compressive force resulting in a smaller cross section.

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Chicago, Ill.

CALENDAR

Conference on prestressed concrete, Newark College of Engineering, Newark, N. J.—Apr. 6-9-13-16-20-23-27 and 30—7:30 to 9:30 P. M.

Building Officials Conference, Hotel Baker, Dallas, Tex., April 6-9.

Michigan Engineering Society, Kellogg Center, East Lansing, Mich. Apr. 10-11.

Diamond Jubilee Convocation, Case Institute of Technology, Cleveland, Ohio, April 10-11. Topic, "The Challenge of Free Men in the Atomic Age."

Michigan Engineering Society, Michigan State College, East Lansing, Apr. 10-11.

Tennessee Highway Conference, University of Tennessee, Knoxville, Apr. 16-17.

Pacific N. W. Industrial Waste Conference, State College of Washington, Pullman, Wash., Apr. 16-17.

Surveying and mapping conference, University of Missouri, School of Mines and Metallurgy, Rolla, Mo., Apr. 17-18.

Connecticut Development Commission, annual conference, Hartford, Conn., Apr. 19-22.

N. Y. State Society of Professional Engineers, Hotel New Yorker, N. Y. City, Apr. 23-25.

National Engineering Conference, American Institute of Steel Construction, Engineering Societies Bldg., Detroit, Mich., Apr. 22-23.

Conference on residential air-conditioning, Packard Auditorium, Lehigh University, Bethlehem, Pa., Apr. 24-25.

Concrete Reinforcing Steel Institute, annual meeting, the Carolina Hotel, Pinehurst, N. C., Apr. 27-May 2.

Pacific N. W. Conference, ASCE, Seattle, Wash., Apr. 30-May 2.

American Water Works Association, annual meeting, Municipal Auditorium, Grand Rapids, Mich., May 10-15.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, N. Y. City, May 14.

Society of Fire Protection Engineers, Palmer House, Chicago, May 21.

Society for Experimental Stress Analysis, Hotel Schroeder, Milwaukee, Wis., May 20-22.

American Society of Civil Engineers, spring meeting, Casablanca Hotel, Miami Beach, Fla., June 17-19.

National Society of Professional Engineers, Sheraton-Beach Hotel, Daytona Beach, Fla., June 18-19.

American Society for Engineering Education, annual meeting, University of Florida, Gainesville, June 22-26.

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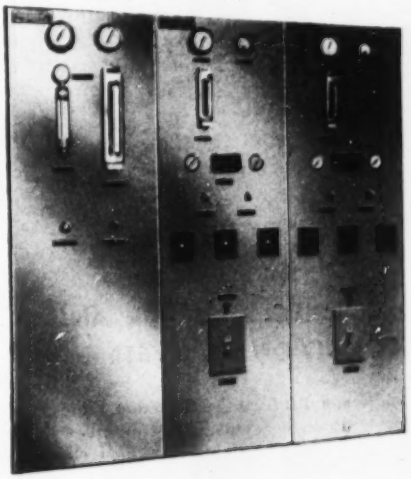

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JENKINS PRACTICAL PIPING LAYOUTS 66

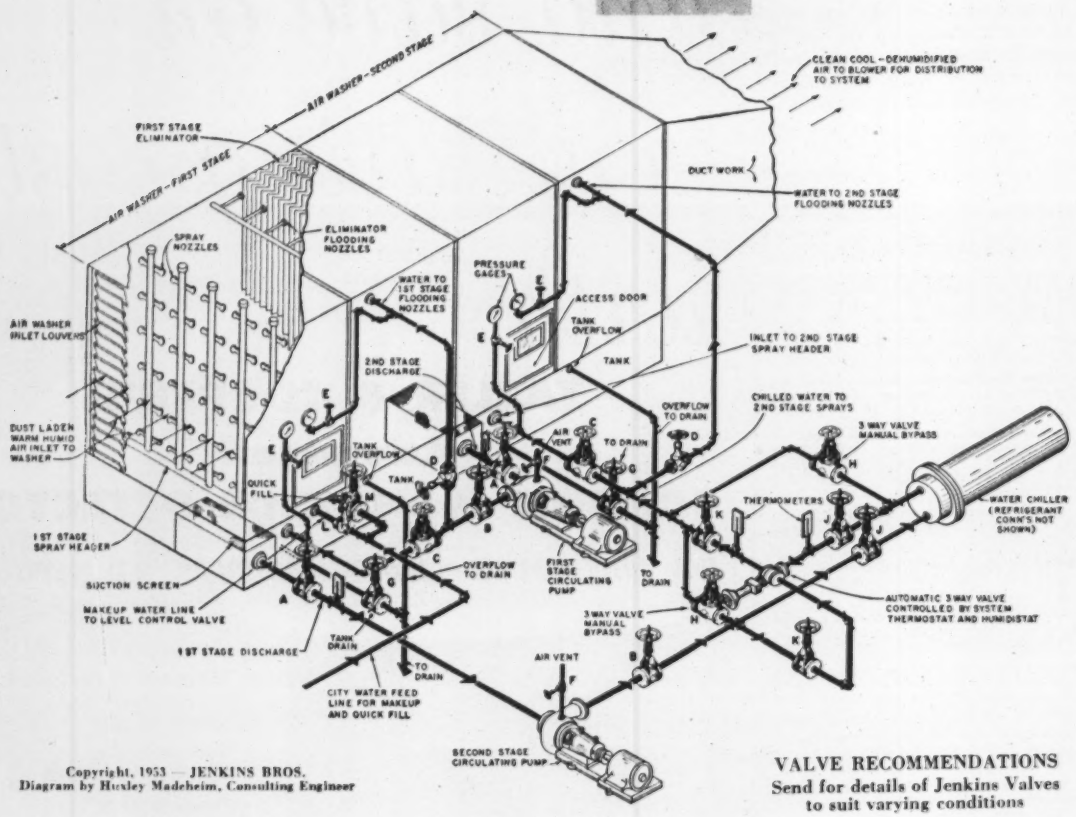

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Diagram by Huxley Madeheim, Consulting Engineer

How to plan PIPING CONNECTIONS FOR AN AIR-WASHER AIR CONDITIONING SYSTEM

The air washer air conditioning system illustrated is a two-stage installation designed to cool, dehumidify and clean air for non-industrial (comfort) purposes.

Water from a chiller, sprayed through second-stage nozzles, picks up heat from the air stream. This water is collected at the bottom of the tank and, still at a temperature below the dew-point of the entering air-stream, is sprayed through the nozzles of the first stage. Here, too, it cools and dehumidifies the air. The water is then pumped back through the chiller and the cycle is repeated.

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Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation.

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B	2	Fig. 651-A, I.B.B.M. Gate	Pump Discharge Shutoff
C	2	Fig. 142, I.B.B.M. Globe	Spray Header Control
D	2	Fig. 956, Bronze Globe	Flooding Nozzle Control
E	4	Fig. 741-G, Bronze Needle	Pressure Gage Control
F	2	Fig. 741-G, Bronze Needle	Pump Air Vents
G	2	Fig. 651-A, I.B.B.M. Gate	Tank Drains
H	2	Fig. 142, I.B.B.M. Globe	3 Way Valve Manual By-Pass
J	2	Fig. 651-A, I.B.B.M. Gate	Water Chiller Shutoff
K	2	Fig. 651-A, I.B.B.M. Gate	3 Way Valve Shutoff
L	2	Fig. 47, Bronze Gate	Feed to Level Control
M	1	Fig. 651-A, I.B.B.M. Gate	Tank Fill Valve for Start up

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THE CONSTRUCTION WEEK

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• **Private hands off**—After two years of intricate political, financial and legal maneuvering, Virginia State Highway Commission made one thing clear:

Virginia may get some toll turnpikes built—but they'll be built by the state, not by private interests.

That point was crystal clear in a a three-page policy statement to the effect that the commission would accept no capital stock in a private corporation. Target was the Virginia Interstate Turnpike Corp., which proposed building a 200-mile, $200-million toll road across the state from north to south. Key to the corporation's financing plans was the hope that the state and communities along the route would accept the common stock so that VITC could issue tax-free bonds.

But the resolution also was seen as a death-blow to two other private corporations—Old Dominion Turnpike Corp.—which planned a 75-mile toll road from the West Virginia Line to North Carolina; and Commonwealth Turnpike Corp., which was going to build a toll road in the Richmond-Petersburg area.

Key to the commission action was an opinion from the state's attorney general, who believed that a 1952 act of the legislature to authorize stock transfers might be unconstitutional.

• **Installment plan**—Borrowing a leaf from the financial planning of many a householder, California is now considering whether it could buy the Bureau of Reclamation's huge Central Valley Project on the installment plan.

State legislators—determined to get control of the big power and irrigation scheme somehow—have been stymied by the relatively enormous cost of a one-payment purchase. They enthusiastically approved the new idea and directed State Engineer A. D. Edmonston and the California Water Project Authority to determine the feasibility of buying Central Valley by payments over a period of years. They earmarked $10 million as a down payment, to point up the state's serious intent.

• **Pay up**—If the Canadian government wants a $400-million network of military roads in western Canada, the provinces are perfectly happy—but the federal government must participate heavily.

Meeting at Edmonton, provincial highway ministers drafted plans for the road net—to be built to carry 80-ton tanks and motorized troops. They said they'd be happy to leave actual mapping to the federal government—and then put in the kicker: The federal government should stand the major share of cost.

• **Atom plane**—Utah Construction Co. forces should be at work now under a $4.5-million AEC contract, building first facilities for testing a prototype aircraft propulsion reactor at AEC's new Arco, Idaho, station.

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WASHINGTON OBSERVER

Any big new program to build a wall against aerial attack around the U. S. is a long way off. "Project Lincoln"—Massachusetts Institute of Technology study done for the Air Force—calls for a new radar-guided missile-interceptor plane ring. Estimated cost: $16 to $20 billion. It would mean new air bases on both coasts, Alaska, and Canada—plus the establishment of hundreds of guided missile and radar installations.

National Security Council will have to come up with details before the program gets a green light. Nothing happens, though, until Congress gets a plan with dollar figures attached to specific items. And that's months and months away.

•

Atomic bomb was a dud as a builder of grass-roots interest in a more effective program of civil defense against enemy attack. Publicity impact of the Yucca Flat explosion was terrific at the time—but Civil Defense officials here see almost no sign of any permanent result. Their hope was to heighten congressional interest, and perhaps get a little more federal money to push the program.

Eisenhower agrees that primary emphasis should be local—and specifically puts shelter-building and the like at the bottom of the list of things which must be done in that regard.

•

The change in leadership in the Public Roads Administration will delay efforts in Congress to increase federal aid to highway construction until next year. Francis V. du Point took over from Thomas H. MacDonald only this week (see also p. 52 this issue), and doesn't intend to come up with recommendations hastily.

The Dondero and other bills aimed at upping fiscal 1954 authorization for PRA from $575 million to $800 million will get no further than the hearing stage, if that far.

•

The Administration is nailing down some bits and pieces of economy: Cancellation of all new federal aid to airports has been ordered. Rural Electrification Administration loans will be cut by $50 million. Southwestern Power Administration funds will be cut from $9 to $6 billion.

•

Basing point controversy is being kept alive by congressmen who are still trying to get a law passed. Senator McCarran has a bill to write into law the Supreme Court's ruling in the Standard Oil of Indiana case: A seller's good faith meeting of a competitor's price is a complete defense against charges of price discrimination. Now Senator Kefauver has a bill that would act as a block to the McCarran bill.

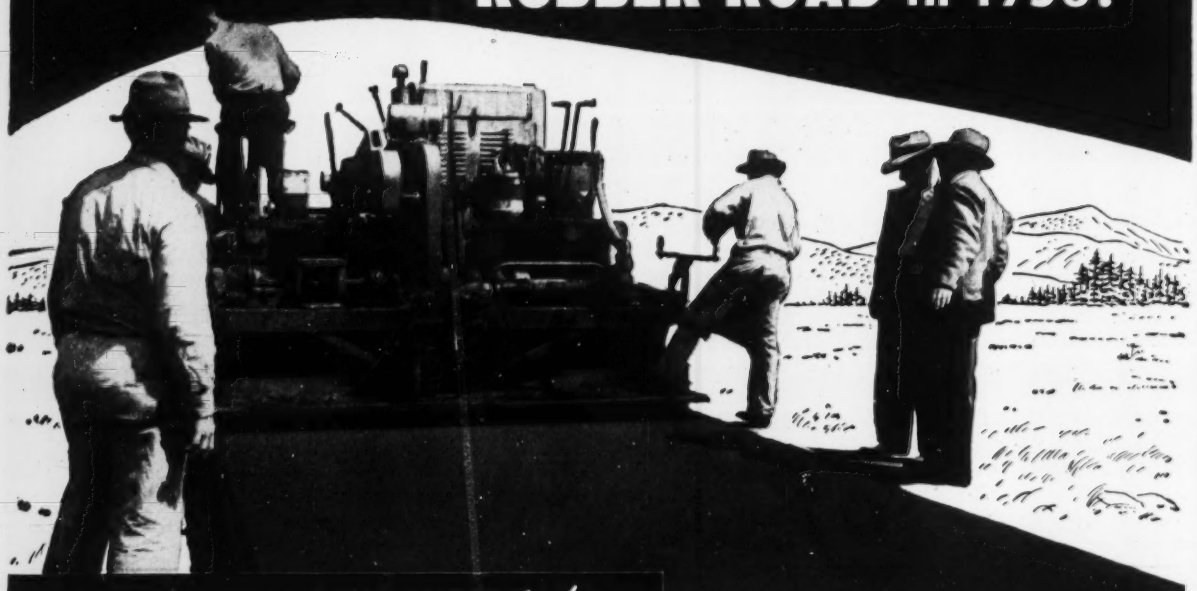
•

Contractors kept the wage stabilizers busy during the two years of wage controls just ended. The Construction Industry Stabilization Commission issued more than 12,200 rulings on requests for higher pay and fringe benefits. That's about three times as many as were granted during a comparable period of World War II. CISC Chairman Thomas Kalis has returned to Labor Department, where he's in charge of Davis-Bacon Law which covers wage rates on public construction.

•

Reorganization of Army Engineers and Bureau of Reclamation is undergoing long and exhaustive study by Eisenhower's reorganization experts. That's what the President told a press conference last week. His words, however, gave a smidgen of comfort to the anti-Engineers crowd: The Engineers have a long record of efficient service, Eisenhower said, but he thought it looked rather odd that we have two great organizations competing in this field.

NOW is the time to plan for your test RUBBER ROAD in 1953!



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SURFACE TREATMENT

Grade of Bitumen .....
Application Rate .... gals. per sq. yd.

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Lbs. per sq. yd. .....

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Ohio ruling favoring asphalt goes to State Supreme Court

Turnpike Commission suspends bidding on concrete— officials fear effects on state and municipal work

The controversy over the Ohio Turnpike Commission's refusal to accept bids for asphalt paving was passed on to the State Supreme Court this week, as bids were withdrawn and further advertising for them suspended. Wide repercussions in road-building procedures seemed an inevitable result.

Prolonging the legal battle over the asphalt vs. concrete issue was an Appellate Court decision. It affirmed a referee's finding that the Turnpike Commission is obligated to allow competitive bidding for both bituminous concrete and Portland cement on the $320-million, 241-mi toll superhighway. (ENR Feb. 26. p. 21, Mar. 5, p. 24).

While attorneys prepared an appeal to the State Supreme Court, the Turnpike Commission began the task of drawing a complete set of specifications covering asphalt paving, in the event the high court also orders alternate bidding. State officials say a court decision could be handed down by July.

• **Delays uncertain**—The extent to which work on the turnpike will be delayed by the latest legal roadblock is also doubtful. While John Landsdale, Turnpike Commission attorney, forecasts a six months' loss of good construction weather, asphalt interests contend there will be no overall delay, because efforts can be concentrated on construction of bridges and grade separations until bidding on paving work can be resumed.

Opinion among state officials is sharply divided as to the probable effect of the present decision on road work of the State Highway Department and the counties and municipalities.

Gov. Frank J. Lausche says he believes the effect will be "to require villages, municipalities, counties and the state hereafter to prepare plans and specifications for two or three types of materials." Meanwhile, Joseph F. Ford, an attorney, filed a demand that the city of Columbus and the state comply with "competitive bidding statutes" and take asphalt-Portland cement bids "on projects now pending."

• **Auditor sees broad effects**—State Auditor J. A. Rhodes likewise saw the decision as affecting all other state and municipal projects. He said if the State Supreme Court upholds the ruling, that would guide his future handling of bids, but he would not make the order retroactive.

State Highway Director Samuel O. Linzell preferred to withhold comment on whether state projects might be affected until he had conferred with legal advisers. However, a spokesman for the Highway Department pointed out that the state has been in the practice of asking bids on only one material but that projects have been pretty well divided according to locality, availability of material and proximity to source of supply.

The attorneys for both the Turnpike Commission and the opposing asphalt interest believed that the order (see box) applied only to the case at issue.

Asphalt interests contend alternate bids will save a considerable sum of money even if the commission awards every contract for concrete.

"There is nothing in the law to compel the commission to award the contract to the low bidder," conceded an asphalt industry spokesman. "It is the lowest and best bidder that's required," he added. "But," he contended, "if there is too great a discrepancy between asphalt and concrete bids, there might be considerable raising of eyebrows around the state."

One indication of how high tempers were running over the issue in Ohio was a statement by House Speaker William Saxbe asking the governor to demand the resignation of the members of the Turnpike Commission and their official personnel on the ground they "have lost public confidence."

Governor Lausche countered with a statement strongly defending the commission members as persons of "integrity, honesty and ability."

Saxbe declared that, aside from the asphalt matter, a number of complaints have been received by the legislature on the commission procedure "in buying land and setting up specifications for equipment such as guard rails." He also mentioned charges of favoritism.

His reference to favoritism related to the commission's specifications for steel mesh, which have been revised following complaints that they gave unfair competitive advantage to the American Steel and Wire Co.

Original specifications provided for steel mesh with horizontal spacing of wires either three or six inches apart. The cheaper three-inch mesh, which only American Steel and Wire could make, has now been dropped to equalize the situation.

Here's how Ohio court reasoned

The Appellate Court decision held that:

"There is considerable difference in the method, and means of constructing the two types of pavement." "But," the court continued, "it was agreed at the outset of the oral arguments that both types of pavement were of concrete. One, Portland cement concrete, and the other asphaltic concrete. This being true, the action of the commission in accepting bids on one type of concrete construction only would seem to be unjustifiable discrimination and to prevent competitive bidding in its true sense."

Judicial notice was taken that asphalt and concrete are comparable types of pavement "in view of the common use to which both these types are employed on our heavy duty roads in the United States."

• Confirms "understanding" — The court held that the commission had agreed to use Portland cement "solely on the basis of lower cost" but added, "It cannot be said that the commission acted with sound discretion when the facts upon which it based its conclusion were manifestly incorrect and known by its engineers upon whom it relied, to be incorrect."

Thus, the decision confirmed the referee's finding that there was an understanding between T. J. Kauer, chief engineer for the turnpike, and the J. E. Greiner Co., consulting engineers to the commission, that "only Portland cement would be used for paving."

Federal grants

President asks Congress for study of state aid policies, revenue sharing

The President this week took action to forestall the demand of state governors for federal withdrawal from the use of gasoline taxes and other revenue sources where national and state governments are in competition.

To gain solid backing for his plan, Eisenhower asked Congress to set up a study commission. In a message to the two houses, he asked the legislators to enact a law establishing "a commission on governmental functions and fiscal resources to make a thorough study of grants-in-aid activities and the problems of finance and federal-state relations which attend them."

In other words, the commission is to come up with recommendations on all federal-aid programs, existing or potential, on federal control of these programs, and on the division of tax sources between the federal government and the states. Eisenhower urged Congress to act promptly, so that the commission's report would be available for the next session, starting in January, 1954.

This move is designed to stall off any hasty action in the present session of Congress. The President's congressional leaders are expected to introduce bills that will call for a commission of about 21 members, with the chairman and vice chairman appointed by the President. The Senate and the House, it is understood, will each have about three members representing them on the study group.

In his message, Eisenhower noted that there are now more than 30 grant programs under which the Federal Treasury aids state and local governments.

In sum total, the federal aid amounts to more than $2 billion, equivalent to about one-fifth of all state revenues. The federal-aid highway program is the largest of these activities. Here, the federal money in general is matched by an equal amount of state money.

But most of the federal grant money, the President indicated, goes for social security, health and education. In some programs, the federal government apportions fixed amounts among the states; in others, it matches state expenditures; and, in a few, it finances the entire cost, the President noted. The grants have greatly stimulated certain state activities, he said, but they have also complicated state finances and have often made it difficult for the states to find funds for other important services.

Forest road funds up

Western road builders got a pleasant surprise last week when the Agriculture Department released its revised budget for fiscal 1954. Money requested for forest roads and trails was increased to $21 million, a $10-million increase over the earlier Truman figure.

Reason: The Forest Service needs more access roads in the next two years to cut the dead and infested timber that has fallen prey to Douglas fir and Englemann spruce bark beetles. Access roads to salvage this timber in Oregon, Washington, Idaho and Montana will help control the further spread of these insects.

Many other items were drastically cut, however, including flood prevention work which was reduced from $15.5 million to $7 million.

Mississippi River bridge application under revision

The Louisiana State Highway Department is revising its application to the Army Engineers for a new bridge across the Mississippi River at New Orleans by specifying a horizontal clearance of 1,800 ft instead of 1,400 ft as originally planned.

Maj. Gen. S. D. Sturgis, chief of Army Engineers, vetoed the original application for a cantilever-type bridge because a 1,400-ft horizontal clearance would constitute a navigation hazard.

The revision, however, still leaves the New Orleans Dock Board critical of the bridge proposal, which provides for a vertical clearance of 135 ft and one pier in the river. The dock board contends that a pier in the river would be a navigation hazard—an opinion in which the New Orleans Steamship Assn. concurs—and that a vertical clearance of less than 175 ft would hinder port operations.

Arrayed against the dock board on the issue are the state highway department, the Mississippi River Bridge Authority and New Orleans officials.

The Army Engineers have recommended that any future applications should have the concurrence of all state agencies involved thus, in the course of revising the original application to meet Army Engineer requirements, other changes in specifications are being studied in an effort to enlist the dock board's support.

The dock board's contention that a bridge cannot be built within the port limits without its approval creates an awkward situation. For like the highway department and bridge authority, it too, is a state agency.

Missouri Basin

Inter-agency committee tries conciliation of high vs. low dam issue

The Missouri Basin Inter-agency Committee, meeting at Torrington, Wyo., last week, formulated a conciliatory position on the high vs. low dam controversy, recognizing the need for some major federal flood control projects.

Making its first official appraisal of the issue which has centered particularly on the Oahe Dam near Pierre, S. D.—the largest Missouri River main-stream dam to be built under the Pick-Sloan plan (ENR Jan. 8, p. 27)—the committee made recommendations aimed at reconciling flood control and water use interests. Its principal findings were:

- Major dams, levees and channel improvements of the Corps of Engineers are essential to control and to help prevent destructive floods.
- Watershed programs of the Department of Agriculture are essential for improving and protecting the land, reducing runoff and preventing flood destruction in any of the upper watersheds.
- Neither is a substitute for the other in the over-all basin development program.

Reporting on the issue, which has figured prominently in recent survey reports on the Kansas and Missouri River Basins (ENR Feb. 26, p. 24; March 5, p. 21) was a subcommittee composed of Glen J. Hopkins of the U.S. Public Health Service at Kansas City, chairman Gladwin E. Young of Lincoln, Neb., field representative of the Department of Agriculture, and Wendell E. Johnson of Omaha, Missouri River Division of the Army Engineers.

Referring to the effectiveness of watershed programs in controlling floods, the committee declared: "These upstream programs are a needed complement to downstream control works, but are not a substitute since they will not stop major floods nor avert flood disasters on larger streams and major rivers. They will have only minor effects on disaster-type floods such as were experienced in the Kansas and Missouri Valleys in 1951 and 1952."

The report, in reference to the Army Engineers projects, declared: "It is further agreed that major dams and reservoirs, levees and channel works are necessary for the control of major floods downstream and that these improvements should be undertaken where soundly justified by economic and other considerations."

AGC seeks new procedures in government contracting

Better pay for municipal engineers among proposals adopted by construction industry representatives

Robert H. Dodds
Associate Editor

Recommendations to improve procedures under which contractors deal with government agencies were adopted by the Associated General Contractors of America at its annual meeting in Miami last week.

The AGC, in hailing the Administration's wage and price decontrol, acknowledged that the construction industry has an obligation to justify the move by holding the line on wages in current labor contract negotiations.

Better pay for construction engineers on municipal work was urged in one AGC resolution. Another suggested that all governmental units adopt tighter, more uniform practices of contract administration and inspection.

• **"Hold the line"**—In one resolution pertaining to wages, the convention endorsed President Eisenhower's suspension of wage and price controls. But, it recognized that the construction industry now has an obligation to prove that suspension was justified, by holding wages at their present level in union contract negotiations this spring.

It was the sentiment of the convention that, generally, wages paid in construction have increased commensurately with increases in the cost of living, as well as with the level of productivity. Because the cost of living has leveled off, it was believed there is no basis for further increases now on that score.

Although the Taft-Hartley Act and other labor laws were discussed, little came out of the convention in the way of opinion on them. AGC, however, reiterated its stand favoring maintenance of historic differentials that have been recognized between building construction and highway and heavy construction.

• **Municipal force account**—Having in the past succeeded in obtaining limitations controlling the percentages of force-account work on federal agency construction, AGC turned its attention to such work by municipalities.

One speaker included states as well as counties and cities in his definition of "municipality."

The convention recommended that public works contracts be awarded to the lowest responsible bidder after public advertisement. This is a traditional stand of AGC, but the convention went a bit further, recommending that when a governmental agency undertakes construction with its own forces it establish comprehensive and accurate cost records and keep them available for public inspection. The resolution came as a result of work by an AGC joint cooperative committee with the American Public Works Assn.

This committee also originated resolutions pertaining to the administration and inspection of construction contracts, and to adequate compensation for municipal engineering employees. The convention recommended that a "competent engineer" or "competent engineers" in the same department of a governmental unit should supervise both the contract administration and inspection functions of the unit's construction. In preliminary discussions the term, "registered professional engineer," was urged for inclusion in the convention's recommendation. The stated objective of this resolution was "to assist in obtaining more uniform procedures for (administration and inspection)."

To increase further the quality of design and contract administration, AGC recommended that salaries for construction engineers on municipal work should be raised to a point where they are commensurate with the responsibilities of posts, and with salaries "paid by private industry."

• **Highway financing**—Further in regard to salaries, there was convention talk reaffirming support of higher pay for state highway engineering personnel, but the principal convention resolution affecting highways had to do with financing.

Noting the growing inadequacy of interstate roads and the fact that the federal government puts into highway work only a fourth of the money from gasoline taxes and automotive excise taxes, AGC recommends increase of federal aid to the full amount collected. Privately, some AGC officials and members noted a growing move to ask the government to get out of the gas-tax business entirely. This, they believe, is a move away from the public interest, and it should be discouraged. Furthermore, it was said that the federal-aid construction program should be administered through present channels.

• **Task units**—Getting into the details of contracting—points where AGC and big construction agencies recognize the need for ironing out points of difference—the convention passed two resolutions.

One pertained to abnormal hazards; the other to material and equipment supply by the owner. Each resolution was aimed at reducing contingencies in contracts, and resulted from conferences by specifications task units. The principal such units included those with the U. S. Corps of Engineers, the Bureau of Yards and Docks, and the U. S. Bureau of Reclamation.

Abnormal hazards, defined as damages from "flood, ice, earthquakes, acts

H. E. FOREMAN, managing director of Associated General Contractors of America, delivering annual report.

A. S. HORNER of Denver, outgoing president, making opening address at AGC's 34th annual convention in Miami.

of war, riot or other disasters which are beyond the control of the contractor," should be the responsibility of the owner, so they need not be included as contingency items in a contractor's bid.

In discussing the possibility that this provision might be made in U. S. Engineer and Bureau of Yards and Docks contracts, task units were optimistic. The U. S. Bureau of Reclamation unit found a situation less encouraging. Grant Bloodgood, USBR chief construction engineer, noted that the cost of each project is financed by repayment agreements with water users, and therefore must stand on its own fund; there is no general fund on which USBR could base an agreement to assume such disaster risks.

• **Materials and equipment**—These specifications task-units also discussed "furnishing materials and equipment" with their owner groups seeking further centralization of construction control in the general contractor. The task units originated a resolution asking governmental agencies to specify that all materials and equipment to be incorporated into the project be furnished by the contractor, "except where special circumstances make it feasible for the government agency to furnish them."

The special circumstances are found mostly in installed equipment like pumps and turbines, where designs frequently are completed after the general contract is let, or where manufacturers insist on dealing directly with the government.

In the case of such items as steel and cement, federal officials who expressed themselves at the convention strongly favored procurement by the contractor. Capt. A. D. Hunter, Deputy Chief of the Bureau of Yards and Docks, said government procurement of such materials entails too much trouble to make any dubious savings worth while. Mr. Bloodgood cited a USBR estimate that $1 million could have been saved in 1952 if contractors had procured materials that were furnished by the bureau.

Another subject reported by task units was payment for the cost of the contract bond. Perhaps the most representative arrangement is to obtain permission to apportion the bond's cost among the first two or three monthly estimates, depending on the duration of the job. U. S. Engineers and Bureau of Yards and Docks officials go along with this procedure where feasible.

• **Bid errors**—Also discussed was the subject of errors in low bids. Some officials have noted an increase in the number of low bidders who claim an error in their bid and seek to change it. AGC members consider the allowance of such changes inimical to the principle of award to the lowest responsible bidder and recommend that withdrawal of a bid be allowed only if the bidder can prove the good faith of his mistake. The group did not believe that it should recommend what the award agency then should do with a project.

In other actions the convention reaffirmed its espousal of legislation assuring the right of judicial review of government engineers' decisions; opposed federal legislation that would require contractors to name their subcontractors in their bids; opposed the consolidation of federal civil construction functions; and reaffirmed the AGC stand against valley authorities.

• **Officers installed**—The convention installed C. P. Street, Charlotte, N. C., building contractor, as national president of the association (ENR, March 26, p. 72). He succeeded A. S. Horner, of Denver, Colo. New vice-president is John MacLeod, of Paramount, Calif. William Muirhead, Durham, N. C., was reelected secretary-treasurer.

• **Proctor speaks**—Principal speakers at the opening session of the convention were Carlton S. Proctor, past-president of the American Society of Civil Engineers, and Walter Williams, Undersecretary of Commerce. H. E. Foreman, AGC managing director, gave his annual report at this session.

Proctor dwelt on the engineer's responsibilities in a free society—a message he has carried to more than a hundred engineering groups in North America. Calling for a "spiritual mobilization coincident with our material mobilization," he said that Americans must free themselves of their fear of the atom bomb and direct their attack to the "roots of confusion and decaying morality" if they are to preserve liberty in this country and provide leadership for the world.

Williams said America must not rely solely on its economic strength. After pointing out disadvantages in "economic instability," he suggested "reasonable stability" as a goal for economic policy. Stability by itself implies a lack of flexibility and good growth. Saying that our new bureaucrats have their feet rooted in free economy, he added that it is government's correct function to cooperate with business, not to operate it. Productivity is the watchword of progress; people should be taught to recognize its importance as well as to know what can be done to increase productivity.

Attempting to answer the question: "What will happen when defense programs taper off?," Williams said that governmental agencies are trying to get their houses in order so they will be ready to make the transition from defense to private activity. The transition should be accomplished by the the creation of more goods on which we shall be able to base our productive capacity.

• **Military represented**—The Army Chief of Engineers and the Deputy Chief of the Navy's Bureau of Yards and Docks addressed the second general sessions.

Maj. Gen. S. D. Sturgis complimented the contractors on their ability to keep up with needs for construction and said, "Woe betide this country should it ever forget the bulwark that civil works of the Corps of Engineers has ever been to the national defense." He referred to the dangers likely to result if civil functions were taken away from the Army—a sentiment consistent with one of the convention's resolutions.

In his comments on contractors' dislike of alternate designs, General Sturgis said these would be called for only in the case of repetitive structures like barracks.

Under the present Administration cost plus fixed-fee work will be cut to the bone and the Army is getting out of the equipment rental business he said.

• **Morocco defended**—A substantial portion of General Sturgis' talk covered problems of overseas work in peace time. He reviewed the circumstances that gave critics a field day in connection with air base construction in Morocco, saying that engineers and contractors had accomplished a remarkable job.

Captain Hunter also touched, but lightly, on foreign work when he mentioned current rumors of contract work in Spain. Since no agreements have been reached about such work, rumors are all that are available at the present time.

However, during a recent visit to Madrid, a friend of Captain Hunter's said he felt as if he were attending an AGC convention, there were so many American contractors around. Captain Hunter then talked about project screening after the recent construction freeze order, calling today's status of government work "on dead center."

The convention's host, South Florida Chapter, AGC, scheduled business sessions in the morning only, leaving plenty of time for social activities, such as a buffet meal, a night club show, an afternoon at the races at Gulfstream Park and swimming.

State legislative sessions coming down home stretch

Major public works measures adopted by lawmakers of New York and four western states reviewed

State public works programs are being hammered into final shape in legislative chambers across the country as sessions which convened in January draw to a close.

Among the legislatures which already have adjourned are those of New York and the four western states of Washington, Wyoming, Utah and Idaho.

New York State legislators sustained the state's already record-high public works program with new appropriations of $177 million. The Washington state legislature took steps to get a long-range toll highway and bridge program under way. Utah adopted far-reaching measures to curb pollution and Idaho passed a model groundwater code.

A thumbnail sketch of the major legislation of interest to engineers and contractors, passed by the five state legislatures follows:

New York

With additional funds voted by the recently adjourned legislature, New York State is expected to have at least $700 million in construction projects under way by the end of this year. This will represent the biggest public works program ever undertaken by the Empire State.

Continuing to dominate the construction picture will be work on the $428-million New York-Buffalo thruway. Contracts totaling $248 million have been let, leaving $180 million to be awarded.

• **Highway expenditures**—The legislature voted about $177 million in new public works funds at the session just closed. This amount, added to carryover appropriations and federal highway aid funds, make a total of $272 million available for public works other than the thruway.

A total of $86.5 million will be spent on highways and parkways, in addition to $150 million in projects already under way. The legislature this year voted $41 million of the $75 million to be devoted to highway work. A $31-million grade crossing elimination program will carry forward the state's long-range effort to improve highway safety.

In addition, the legislators appropriated $4.6 million to cover the state's share of the second year of a 10-year program to improve farm-to-market roads. Towns provide matching funds with assessed valuation and mileage forming the basis for contributions.

• **Public building projects**—Contracts totaling about $60 million are expected to be placed for public building construction before the end of the calendar year, in addition to $97 million already under contract.

Included in the public building program is $31 million to provide 1,500 additional beds at three state hospitals and new service facilities at mental institutions. Most other buildings programmed are for state educational institutions.

The legislature authorized construction of a toll road connecting the state highway system to a mountain-top park at Lake George. A temporary commission, with power to issue bonds, was created and given an appropriation for surveys and preparation of cost estimates.

• **New legislation**—The Empire State lawmakers passed a number of measures affecting public works and related matters. Among them were acts authorizing:

• The superintendent of public works to pay 60% of appraised value of lands appropriated for state purposes, pending settlement of any claim arising from disputed property values.

• Two or more municipal corporations to contract joint indebtedness, outside their state-fixed debt limit, to provide for a common supply of water.

• An increase from 20 to 30 years in the maximum period for which bonds may be issued for erosion-arresting public works projects along the Atlantic seaboard, but with a limitation of 20 years for those not constructed entirely of steel, stone or concrete.

Legislation was adopted clearing up the questioned legality of the Education Department's 10-year-old practice of allowing college engineering graduates to take the first two parts of a three-part licensing examination before completing the four years of practical experience required for a license.

The lawmakers extended for another year the life of temporary commissions to study the needs and costs of school buildings and methods of highway financing.

Washington

Gov. Arthur B. Langlie has signed into law measures passed by the Washington state legislature authorizing a long-range road and bridge construction program costing in excess of $600 million.

Projects provided for under these legislative acts include:

• A bridge across Puget Sound and probably one across Hood Canal, costing a total of $100 million. The toll bridge authority is empowered to go ahead on this project following studies and surveys but construction is unlikely to start before 1955.

• A toll freeway from Tacoma through Seattle to Everett costing $200 million. Studies have been authorized on this project, but construction is farther away—maybe as far as 10 years.

• General highway construction amounting to $240 million.

Four projects—completing the widening of the Pacific Highway, four-laning the Snoqualmie Pass Highway, roads in the Columbia Basin and a new highway into the Columbia Basin—will be carried out under an $18-million bond issue.

A second bridge across Lake Washington east of Seattle will cost $16 million.

The legislature also approved a $20-million revolving-fund bond issue for emergency school construction and a $4-million state office building in Seattle.

Wyoming

Among acts approved by the Wyoming legislature was a resolution submitting to voters in 1954 a proposed constitutional amendment prohibiting the use of gasoline-tax funds for anything other than road-building purposes.

State gasoline taxes, amounting to $7 million annually, are not now used for any purpose other than road building, but Superintendent of Highways J. R. Bromley said the "anti-diversion" amendment is needed as a future safeguard. The gasoline taxes and $1.5 million in federal royalties from state oil lands are major sources of revenue for Wyoming highway construction. The department has its own fund and does not depend upon biennial appropriations by the legislature.

The session turned down an attempt to create a three-man public works contractors' state licensing board, patterned on Montana and Idaho agencies, which would have required all contractors engaged in public works to apply for licenses costing $100.

A law was adopted to reorganize the state highway commission. It provides for the appointment of seven commis-

sioners, each from a district of three or four counties. It stipulates that all cannot belong to one political party.

The legislature directed its interim committee to make a detailed study of tax exemptions and highway uses and fees.

Appropriations for the 1953-55 biennium included $2.5 million for capital outlay and special appropriations. Among construction appropriations were $325,000 for a three-story building at the state fair grounds in Douglas.

The legislature refused to ratify the Cheyenne River compact between South Dakota and Wyoming, which allocates unappropriated water of the Cheyenne River Basin between the two states. South Dakota ratified it but the Wyoming legislature failed to approve it in 1951 and again this year, contending the 20% allocation to Wyoming users was insufficient.

Utah

Utah's legislature passed a series of measures designed to put an end to pollution of water supplies, lakes and streams in the mountain-ringed state.

Gov. J. Bracken Lee promptly signed into law measures recommended for years by the state health department, spurred on in part by word that the U. S. Public Health Service contemplated barring Salt Lake City drinking water from use aboard interstate carriers.

The principal measures give the state health dept. power to:

1. Establish and set up enforcement of minimum sanitary standards for the collection, treatment and distributing of drinking water.

2. Safeguard the quality of water supplies to the public, and also regulate the effluent of sewage systems, sewage treatment plants and trade wastes discharged upon the land or into surface or ground waters.

3. Inspect and approve collection, treatment and disposal of sewage, industrial wastes, garbage and refuse. . . . Regulate and control construction, extension, operation and maintenance of sewage collection, treatment and disposal systems. . . . Approve plans covering construction and extension of such systems.

4. Protect watersheds used for public water supplies.

5. Prevent the pollution of any water through a newly created water pollution control board.

The broad powers given the state health department came in the wake of a sizeable squabble concerning the safety of Salt Lake City's water supplies, which come from open-flowing mountain streams in the Wasatch Range, and are treated solely by chlorination.

Such groups as the League of Women Voters, the state engineering council, and the medical group have sought complete filtration of the city's water supply, rather than plans for treatment by coagulation, sedimentation and chlorination put forth by municipal officials.

As a result of the biennial legislative session, D. H. Whittenburg, Utah's state road commission chairman, was able to announce that $9.5 million of highway construction is planned for the fiscal year 1953.

A total of $3 million will be spent for 38.3 mi of construction in the federal-aid primary highway program. Federal-aid urban program funds will virtually all be expended in Salt Lake City. Total of farm-to-market federal-aid programs call for 52 mi of construction, including state and county planning, at a $2-million cost. For state projects scheduled without federal aid, 38.3 mi of work is slated at a cost of $2 million, including stretches of state highways passing through such cities as Ogden and Salt Lake City.

Idaho

Idaho's legislature set up a two-year state public works program totaling $2.2 million and approved a record-high state budget with an estimated allocation of $23.2 million in state funds for highway construction and maintenance.

A right-to-work bill and a 75-cent-per-hour minimum wage law died in committee. However, the legislature passed measures increasing maximum death benefits under the workmen's compensation law from $10,000 to $14,000 and increased maximum weekly benefits under the law by $3 per week.

Also approved was a new "mode" groundwater code, administered by the state reclamation engineer, largely based on the doctrine of "first in time is first in right." The bill gave the reclamation engineer full authority to control use of groundwater.

Repeal of the ton-mile tax on motor carriers, effective Jan. 1, 1954, and adoption of a two-plate registration and use license system will affect revenues available for highway uses. The Idaho highway construction and maintenance program operates under a continuing fund drawn from all monies received from state gasoline taxes, motor vehicle licensing and miscellaneous highway user licenses. The state budget estimated that $22.4 million would be available from gas tax and licensing, and $1.7 million from miscellaneous sources. With federal grants of $13.5 million, total available for the biennium was estimated at $37.7 million.

Largest allocation in the state's $2.2-million building program was $760,000 for a 50-bed wing at Gooding Tuberculosis Hospital.

A bill was passed authorizing the state highway board to enter into agreement with private companies to build and maintain public highways on which overloads were permitted. This action followed passage of a bill granting mine, logging and farm truck operators a 10% overload tolerance.

Earth fault to delay Folsom Dam project

A costly delay in the Folsom Dam project on the American River near Sacramento, Calif., will result from an earth fault in the left abutment.

The Sacramento district office, Corps of Engineers, didn't want to hazard a guess on the length of time completion of the project will be set back but contractors' representatives said it may be a year or longer.

The Folsom Dam contractors are Merritt, Chapman & Scott of New York and Savin Corp. of Hartford, Conn.

A 162,000-kw power plant at the damsite is being built as a Bureau of Reclamation project by the Guy F. Atkinson Co., of South San Francisco.

The Army Engineers reported the fault is in a "substantial" part of the left abutment 30 ft below the foundation. The fault failed to show in initial explorations or rough excavation work.

Work has begun on mining out the rock overlying the fault zone. It will be replaced with concrete.

The difficulty will interfere with the concrete pouring operations. Some 200 ft of the trestle used in concrete operations will be removed to enable workmen to get at the fault area. As a result, concrete for the dam's mid-section will have to be trucked from the mixing plant, a much slower process.

Contractors protest ban on small town road jobs

Contractors' representatives fought vigorously last week before a North Carolina legislative committee against a proposed measure that would require the state highway department upon request to do street work for towns of 5,000 or less.

Sponsors of the measure contended that small municipalities have not been able to get much work done with the small amount of state aid they receive for streets and "don't have enough money to interest the contractors."

Industry has big stake in conserving water and reducing stream pollution

Careful planning, equitable legislation and public support for clean streams urged at power conference

Industry knows it has a big stake in reducing stream pollution, and is attacking the problem on many fronts. This was the gist of two papers presented at one of the technical sessions of the 15th annual American Power Conference held in Chicago last week.

"Industry is becoming more cognizant of the need for conserving our water resources since it is the largest consumer," declared Harry W. Gehm, technical advisor, National Council for Stream Improvement of the Pulp, Paper and Paperboard Industries, Inc., New York.

"Continuing adequate supplies of water are essential to industrial expansion. Industry's recognition of this necessity is shown by the extensive research and development programs that it has carried on in the field of pollution control alone," he pointed out.

• **A costly job**—"We must not lose sight of the fact that the consummation of major water conservation efforts is dependent on our ability to finance them," Gehm declared. "The costs involved are of such magnitude that we cannot afford wastefulness due to shoddy planning, lack of knowledge or duplication of effort by either government or industry."

"Poorly conceived legislation aimed at effecting immediate cures for all problems involved, in the past has had a hamstringing effect on pollution control and conservation," Gehm continued but, he pointed out, common sense legislation, in which industry has had a voice in formulating has repeatedly gained the support of the majority of that group.

A detailed analysis of industry's progress in pollution control, based on his studies during the past two years, was presented by A. E. Griffin, director, technical service, Wallace & Tiernan Co., Inc., Newark, N. J.

• **Good housekeeping needed**—Water purification, he said, falls within the three general classes: physical, biological and chemical. But a fourth, and vitally important classification is "good housekeeping."

"Good housekeeping, which is based on the fact that pollution abatement begins with the plant itself, is becoming the first line of attack on the problem and has the best chance of paying dividends," said Griffin. "It entails the elimination or reduction in the amount of waste by changes in manufacturing methods; by recovery of material ordinarily discarded; by repairing leaks; or through the re-use of water or other liquids by minor treatments, adjustments or blendings within the plant itself."

By way of a few examples, Griffin told how one manufacturing plant, by modernizing its equipment and improving its processes, has reduced the amount of wastes to such an extent that significant reduction of BOD was noted as far as 20 mi downstream.

Another plant, through a 7-year plan of modernization has reduced the strength of its wastes from a population equivalent of 350,000 to one of 28,000.

In summing up his talk, Griffin declared that industry is constantly developing new methods of treating wastes that heretofore were considered untreatable. This important work is now being carried out, he declared, by teams of sanitary engineers, sanitary biologists, and sanitary and industrial chemists.

• **An encouraging view**—Encouraging views on stream pollution abatement were expressed by Edward J. Cleary, executive director and chief engineer, Ohio River Valley Water Sanitation Commission, Cincinnati. The solution to the pollution problem, he declared, is not the simple matter of putting a legal prohibition on all waste discharges. Neither is it waiting on the development of technical knowledge.

"We already have a wide variety of engineering methods to modify, treat or otherwise reduce nearly all types of pollution," said Cleary, "and if there were sufficient incentive and cash to apply the know-how already available there would be no pollution problem."

Stream pollution abatement, declared Cleary, is primarily a problem of generating positive support for clean streams—by every citizen, by every community, and by every industry. Such support, however, must be evidenced by a willingness to pay the price, he warned.

Replacement—Steel girders are being erected for South Dakota's longest bridge—a 4,890-ft railroad span across the Missouri River near Chamberlain—which will replace a structure to be flooded by water impounded behind Fort Randall Dam 75 miles downstream. It is being built by the Army Engineers for the Chicago, Milwaukee, St. Paul & Pacific Railroad. Four of the new bridge's 33 piers were sunk to rock by the pneumatic-caisson method. Others were set on piles. Contractor for the nearly completed structure is the Guy James Construction Co. of Oklahoma City, Okla. The superstructure, about 15% complete, is being fabricated and erected by the American Bridge Co. The bridge was designed by Sverdrup & Parcel of St. Louis.

TESTIFYING before the Senate Labor Committee, Thomas E. Shroyer, former labor advisor to Senator Taft, explained background of Taft-Hartley. (Reni photo)

Labor disagrees at hearings

Relaxation of Taft-Hartley is in doubt as machinists are shown at odds with AFL construction men

Taft-Hartley debate before congressional committees is warming up. The heat is not confined to disagreement between management and labor, either. Much of it exists between the AFL and CIO, and even within the AFL itself.

Thomas E. Shroyer, former labor adviser to Sen. Robert A. Taft of Ohio and now with the Washington law firm of Poole, Shroyer and Denbo, explained the background and developments under the controversial federal labor law before the Senate Labor Committee as it opened hearings last week.

Before the committee winds up open hearings about April 30, Shroyer's detailed analysis will be picked apart by the leaders of the AFL and CIO and affiliated unions. Employers and employer organizations will, for the most part, defend Shroyer's views, although they will not agree with him all the way. House committee hearings, begun in February, will end about the same time. So you can look for debate on the floor of the Senate and House during June. May will be spent on deliberations of the committee.

Shroyer was counsel to the Senate committee in drafting Taft-Hartley in 1947. He also headed the staff of the Senate-House watchdog committee on Taft-Hartley. Some of Shroyer's comments which were given to the Senate committee:

- Taft-Hartley does not forbid a union from putting pressure on a secondary employer; it bans only pressure on the secondary employer's employees. (Taft hopes to correct this loophole in the law's secondary boycott curb.)
- The Truman committee investigated the abuse of issuing "work permits" on government jobs instead of giving the worker membership in the union. One of the amendments proposed would permit a man to work on a union job without a permit if the union would not let him in the union.
- The construction industry did not make effective use of machinery to settle jurisdictional disputes until Taft-Hartley became law.

• No unity—Any chance of unity within the AFL on Taft-Hartley amendments vanished when President Albert Hayes of the International Association of Machinists testified before the House committee. In asking for a return of the closed shop, Hayes agreed that Congress should require unions to be "open" to all workers. That is, there should be no Class B membership and no work permits used. These practices are common in AFL building trades unions.

More surprising, even, was Hayes' flat opposition to any special relief to the construction industry with respect to making union shop contracts, such as was contained in S. 1973 which passed the Senate last year.

"We are opposed to such preferential treatment for one group of labor organizations over another," Hayes testified.

The AFL Building and Construction Trades Dept. was hoping such an amendment would be included in any revision of Taft-Hartley. Its president, Richard J. Gray, has decided to testify in an effort to salvage some relief for construction unions. He likely will testify either April 21 or 22, the two days the Senate committee has set aside to hear AFL unions. He will also give testimony on the House side.

The net result looks like a general tightening of the law if Congress does anything this year. There is growing sentiment, for instance, for returning most labor problems to the states. But labor leaders don't want this. Most state governments are conservatively Republican. Given a choice, labor will take Taft-Hartley.

Wage dispute slows Washington state construction

A dispute over wage demands and a health and welfare program between the AFL operating engineers and members of the Associated General Contractors of America slowly is halting all heavy construction in western Washington state (ENR Mar. 26, p. 30).

The union demands a 15-cent hourly wage increase and a health and welfare plan costing an additional 10 cents an hour. The contractors contend that the cost of living index, used during the last 12 years to set wages, does not justify a wage increase and they offer a health and welfare plan costing them 7½ cents an hour.

The union had declared it would not strike defense projects but the contractors shut down at least three such projects, in protest against union action in striking against non-defense work.

More than 700 operating engineers and numerous other workers are idle as a result of the dispute.

As a result of the dispute the Seattle local of the AFL operating engineers has filed a charge of unfair labor practice with the National Labor Relations Board against the Seattle and Tacoma chapters of the AGC.

NLRB upholds previous rulings permitting employer boycott

Secondary boycott ban interpreted to forbid pressure on employees but not on secondary employer himself

The National Labor Relations Board has come up with two more secondary boycott rulings in the construction industry. The rulings affirm previous board decisions that Taft-Hartley's secondary boycott ban does not apply when a union enlists the aid of another employer in a dispute the union has with a primary employer.

As applied by NLRB, the boycott ban forbids union pressure on employees of a secondary employer, but not on the employer himself. During the current hearings in Washington on amending T-H, Senator Taft has proposed a re-wording to bring union pressure on employers within the boycott ban, too. Action to close this "loophole" in the law will get close attention by the labor committees in Congress.

• **Legal**—In its latest action on the point, NLRB dismissed secondary boycott charges brought against Local 28 of the AFL Sheet Metal Workers by the Ferro-Co Corp., a New York heating system manufacturer.

Under a jurisdictional agreement with the New York Heating, Piping and Air Conditioning Contractors Assn., the AFL local asked a member contractor to "hold off" installing radiator enclosures manufactured by the Ferro-Co Corp., whose employees were represented by another union.

The board ruled there was no violation of T-H because the contractors' association had agreed not to use Ferro-Co enclosures on certain projects. The union's use of this agreement, inducing employer members to effectuate secondary work stoppages, is not banned by the law, said NLRB.

• **Illegal**—In a companion case brought by Ferro-Co, board members upheld charges that Local 28, the association and a member contractor participated in illegal preferential hiring. Under the contract, association members agreed to hire only members of Local 28 for all sheet metal work.

But NLRB dismissed Ferro-Co's argument that there was an additional violation of the law in the way the illegal hiring contract was interpreted. All parties to the contract agreed it required association members to use radiator enclosures made only by companies which hired members of the AFL sheet metal workers. Since there was no interference or coercion directed at employees of non-union firms, all the pressure was on the employers. The board said there was no unlawful restraint present under these circumstances.

"Fire-and-rehire" injunction dismissed in Tennessee

Chancellor Charles E. Dawson of Knoxville, Tenn., has dismissed a temporary injunction which had, in effect, required Glenn H. Henson, Oak Ridge painting contractor, to discharge 34 non-union painters and rehire 34 union painters.

This ended one phase of a court battle that is continuing in both civil and criminal courts. Henson kicked off the fight when he announced that he was establishing an open shop and discharged the 34 union painters. Henson has a contract to paint 1,000 Oak Ridge houses.

The union then got the temporary injunction which the Chancellor's action dissolved. Chancellor Dawson said that attempts to force an employer to hire hostile men were unfair.

Dawson stressed the point that by taking out criminal warrants against Henson, which charged him with violation of the state law prohibiting the discharge of employees because of union status, the union had forced the issue out of ordinary consideration.

The chancellor said that if the warrants had not been obtained he would not have canceled the injunction.

The AFL Painters Local 437 also is seeking a contempt of court ruling against Henson, saying that Henson violated the temporary injunction while it was still in effect.

Henson has said he will claim that the injunction was not properly served on him and that he did not know its full implications.

Strike briefs . . .

• **Dallas**—A 19-day strike at Dallas, Tex., ironworkers which tied up about 40 major construction projects, ended last week with the signing of a one-year contract by the International Bridge, Structural and Ornamental Iron Workers, AFL, and the Dallas County Construction Employers Association.

• **Pittsburgh**—Nearly 25,000 AFL construction workers ended a three-day strike last week on more than a score of heavy construction projects in a 33-county area in western Pennsylvania.

New atomic labor panel organized

President Eisenhower has officially revived and reorganized the Atomic Energy Labor Relations Panel. He placed it in the Federal Mediation and Conciliation Service, as forecast by Engineering News-Record (ENR March 19, p. 29).

AELRP will be part of FMCS and will report annually to the President through FMCS. The original panel, which broke up when Eisenhower suddenly accepted resignations of panel members on March 6, was under the Atomic Energy Commission and reported only to AEC.

The White House had not decided on the new panel members at press time. Selection was being delayed by time-consuming process of security clearance.

The panel will function under new rules which will be consistent with Taft-Hartley and the Atomic Energy Act of 1946. This means that the panel no longer will make recommendations for settling disputes, because Taft-Hartley forbids EMCS to make recommendations. AEC will be consulted in drafting a set of rules.

Eisenhower's announcement on March 24 states that AELRP would take jurisdiction of a dispute only after FMCS finds that mediation and conciliation have been "fully utilized" and AEC agrees that the dispute threatens to interfere with an essential part of the atomic energy program.

Every practicable step should be taken to prevent disputes from threatening construction operations or services vital to the atomic energy program, the President said.

FIG. 1. THE PNEUMATIC ROLLER used at Lookout Point Dam had four wheels, each pair mounted on opposite sides of a longitudinal trunnion to permit them to oscillate on rough ground (see Fig. 5). It was built by William Bros Boiler and Manufacturing Co. of Minneapolis.

Pneumatic rollers cut costs and time on earthfill dams

George E. Bertram
Engineer, Office of the Chief of Engineers
Washington, D. C.

FIELD TESTS of special types of pneumatic rollers conducted over the last five years have demonstrated to the satisfaction of soil experts of the Corps of Engineers that both time and money can be saved by the use of such rollers in the construction of rolled-fill dams. Using rollers built to specifications developed by the corps as a result of these extensive test operations, it has been found possible to compact earth fills at about half the cost of obtaining comparable compaction by tamping rollers.

This reduction in cost is a direct reflection of the saving in time. However, it appears probable that the total benefit to a project resulting from the substitution of pneumatic rollers for sheepsfoot rollers may be much greater than the mere saving in the cost of rolling. For example, embankment materials containing a high percentage of cobbles and larger rock can be compacted in thick layers, thus eliminating the high cost of rock removal either by a grizzly operation in the borrow area or raking on the fill.

• **Other advantages**—Aside from cost, the advantages now apparent from the use of pneumatic rollers may be summarized as follows:

1. A type of roller has been developed that is suitable for the compaction of a wide range of both granular and cohesive soils to the densities required by design criteria.

2. The compaction of materials can be accomplished at higher moisture content than with tamping rollers. This is of particular importance where materials cannot be dried economically below optimum moisture.

3. Operations may be resumed earlier following rain as the pneumatic rolled fill absorbs less moisture than the tamped fill even though both are rolled with a smooth roller to facilitate drainage before the storm.

This feature should be of importance in sub-tropical climates where rains occur daily.

• **Studies began in 1947**—The limitations of sheepsfoot rollers for the compaction of granular materials, silts, and combinations of rock and soil are well known. Also the compaction accomplished by rubber-tired hauling equipment in traversing earth fills has long been recognized, and the routing of such equipment over a fill is frequently specified as a compaction method. Such routing of hauling equipment is not an entirely satisfactory procedure as it slows the delivery of material and the compaction is not uniform over the entire surface.

In recognition of these limitations, specifications issued by the Portland District of the Corps of Engineers in 1947 for construction of Dorena Dam in western Oregon required the contractor to compact the gravelly materials containing cobbles in layers of 9-in. thickness in the random sections with six passes of a highway roller having a pressure of 325 lb. per inch of tread width.

Because of the difficulty of maintaining this type of equipment at full load under the severe working conditions on the embankment, the contractor substituted a more ruggedly constructed roller of his own design. This double-axle roller had nine 16 x 20-in. tires and weighed about 50,000 lb. loaded. It gave about the same unit pressure per inch of tread width as the highway-model roller but the greater total weight was more effective in compacting the mixed gravel and clay.

• **First specifications written**—Success with a pneumatic roller at Dorena Dam led to the preparation of specifications for what appeared to be a desirable type of pneumatic roller for use on earth fills at Lookout Point Dam, also in the Portland District.

Bids on two rollers that would meet those specifications were called in the spring of 1949. Briefly, the requirements set up in the specifications were as follows:

Each roller was to have a body suitable for ballast loading to a total weight of 70,000 lb, a width of 9 ft, and overall body and tongue length of 19 ft. The tongue length was required to be such that a 90-deg. turn could be made, and it was to be designed to permit the roller to be hauled at 25 mph by a Caterpillar D-8 tractor or its equivalent.

Tires were to be 24-ply, 18:00x24, of free-rolling, earthmoving type, and all wheels had to be free to oscillate over uneven ground. The design was to be such that weights on the tires could range from 200 lb per inch of tire width to at least 600 lb. when fully loaded.

The William Bros Boiler and Manufacturing Co., Minneapolis, Minn., was the successful bidder and supplied two rollers having a single rectangular weight box. Oscillation of the wheels is provided by mounting them in pairs on axles projecting from two longitudinal rocking beams. The wheels are equipped with grease-sealed roller bearings. One of the rollers on the job at Lookout Point is shown in Fig. 1.

The new rollers were used first in the construction of a series of test fills of silt and clay in order to compare results with those obtained from the previous test-fill program with sheepsfoot rollers. They were loaded to 70,000 lb, or 17,500 lb per wheel. The tire pressure was 70 lb.

These tests showed that both a slightly plastic dark brown sandy silt and a dark brown sandy clay of low plasticity could be compacted to 95 percent of standard Proctor density by four passes of the pneumatic rollers on 12-in. lifts. In contrast, when a heavy sheepsfoot roller with 675 lb

per sq in. foot pressure was used on 9-in. layers, twelve passes of the roller were required.

Only two passes of the pneumatic rollers were needed to compact 12-in. layers of well graded river gravel with a size range from ¼ in. to 12 in.

Further study led to the conclusion that the pneumatic rollers should be operated at tire pressures of 85 psi, making four passes on 12-in. lifts. The contractors—a combination of Morrison-Knudsen Co., Peter Kiewit Sons, and Macco Corp.—elected to use a dark brown clayey silt, which has an optimum moisture content of 34 percent dry weight.

An average of 343 density tests made during the 1950 and 1951 working seasons gave 96.8 percent of standard Proctor density, with 70 percent above 95 percent.

Experience showed that compaction planes could be eliminated by scarifying the top of each lift before placing the next layer, also that the speed of rolling could be stepped up to 5 mph.

That work is still in progress and will be completed during the 1953 working season.

• Tests at Lucky Peak Dam—Very similar results were obtained in building the 250-ft high Lucky Peak Dam near Boise, Idaho. There, a 90,000-lb. Bros Model 450 roller having tire pressures of 90 psi. was used for both the random gravel fill and the core. Only two passes were required on 18-in. layers of the random material and four passes on 12-in. layers of the impervious core, which was a sandy clay placed with moisture at 19 percent of dry weight. The average of 313 tests on the core is 98 percent of standard Proctor density, with 72 percent reported to be above 95.

FIG. 2. A DIFFERENT TYPE of roller was tested at Whittier Narrows Dam. Each of its four rubber-tired wheels has an independent weight box hinged to a transverse shaft at the rear to permit independent vertical movement. This roller was made by the Southwest Welding and Manufacturing Co. of Alhambra, Calif.

• A second type of roller—A different type of roller was used for the east embankment of Whittier Narrows Dam near Los Angeles, where alternate specifications for pneumatic rollers and sheepsfoot rollers were prepared by the Los Angeles District in 1950. That dam is to be a 56-ft high flood-control structure with a core of sandy or clayey silt and sandy to lean clay with an average optimum moisture content of 12 percent dry weight. The pervious shell materials are sands and gravelly sands.

Modified Proctor density was to be used as a control for the laboratory testing and accordingly placement control was aimed at 90 percent of modified density.

Specifications required four passes of the pneumatic roller on 12-in. layers or eight passes of the sheepsfoot roller on 8-in. layers for impervious material, and four passes of the pneumatic roller on 18-in. layers or six passes of the sheepsfoot roller on 12-in. random pervious layers.

Winston Brothers Company, the contractor, obtained a Model HCR-4 pneumatic roller manufactured by the Southwest Welding and Manufacturing Co. Alhambra, Calif. This roller, shown in Fig. 2, is designed with each wheel assembly mounted in an independent weight-box unit to permit oscillation over uneven ground. The units are hinged together at the rear by a large tie-bar about which movement takes place. Diagonal bars at the sides provide stability and connect to a heavy goose-neck type draw-bar at the front. The tire size is 21 x 24 with a tire pressure of 65 psi at a rated weight of 100,000 lb load. The roller was towed by a D-8 Caterpillar tractor.

As the contractor elected to add moisture to the impervious material on the fill rather than in the borrow pits, it was necessary to decrease the lift thickness to 6 in. in order to obtain uniform mixing of the soil. Compaction of the core material was therefore accomplished by four passes of the roller with its weight reduced to 88,000 lb.

Here also, very satisfactory results were obtained, 134 samples of impervious fill giving 91 percent of modified Proctor density, with 61 percent above 90 and 23 percent above 93. Because of the increased compactive effort represented by the modified tests, all tests were above

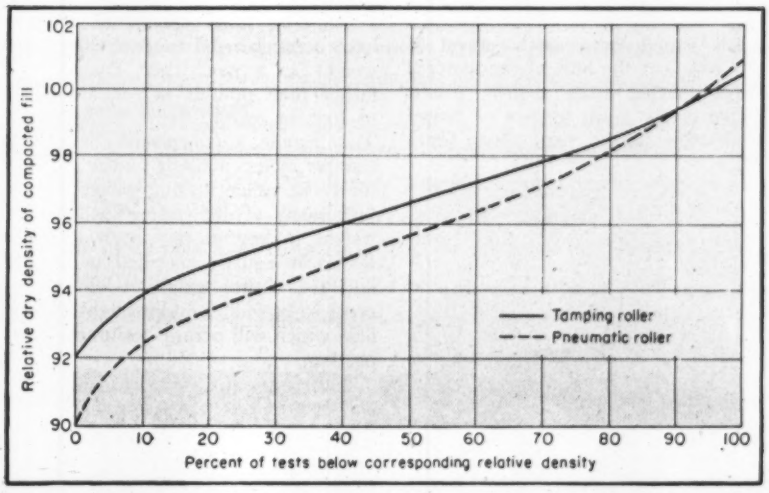


FIG. 3. COMPARISON OF COMPACTION by pneumatic rollers and tamping rollers at Isabella Dam where the modified Proctor method of determining density was used. Average densities for the pneumatic work were slightly lower than for sheepsfoot.

FIG. 4. A FOUR-WHEEL ROLLER somewhat larger than the one used at Lookout Point was used on the Garza-Little Elm Dam in Texas. Similar in design to the Bros roller, is a Ferguson Model RT 100-S from the Shovel Supply Co. of Dallas.

92 percent of standard Proctor density.

The select and random pervious fill was compacted by four passes of the HCR-4 roller on 18-in. layers. The average density obtained was 94 percent of modified Proctor density or 99 percent of standard.

• Comparisons at Isabella Dam—Direct comparisons between rollers were made possible at Isabella Dam in Sacramento by the fact that the initial work was done under two contracts. Sheepsfoot rollers having a total weight of 42,000 lb were used for the first contract and pneumatic rollers with wheel loads of 20,000 lb and tire pressures of 80 psi were used for later work. The pneumatic rollers were the same make as at Whittier Narrows, a Southwest Model HCR-4, but they were towed by a rubber-tired DW-20 tractor.

Soils were disintegrated granites, and the impervious material consisted of gravelly clayey sands and silty sands. They are slightly plastic and have an optimum moisture content of about 9 percent dry weight.

Specifications called for twelve passes of the heavy sheepsfoot roller on 12-in. layers of the impervious material or six passes of the pneumatic roller on 18-in. layers.

A comparison of 224 density tests on impervious fill compacted with sheepsfoot rollers, which was done under the first contract, with 250 tests on similar fill in the closure section of the auxiliary dam, which was built with pneumatic rollers, is shown on Fig. 3. The average density for the sheepsfoot work was 96.4 percent of modified Proctor density, while the average for the pneumatic rollers was 95.5 percent. With both rollers, 70 percent of the tests were above 94.

The contractor—a combination of Macco Corp., River Construction Corp. and Morrison-Knudsen Co.—is using the same equipment to complete the main dam, which will be 185 ft high and contain 2,700,000 cu. yd.

• A third type of roller—Still another type of pneumatic roller was used in building the west embankment for the Garza-Little Elm Dam in Texas for the Fort Worth District. On that project the contractor—Joe W. Hendrix—used a Ferguson Model RT-100S pneumatic roller, shown in Fig. 4. It is similar to the Bros roller, employing two oscillating trunnions each carrying two wheels to permit load distribution on uneven ground. The roller was loaded to 25,000 lb per wheel; tire pressures were 90 lb on the 18x24 tires.

Alternate compaction specifications were used for that project, but because of uncertainties involved in compacting a wide variety of soils, layer thickness for both types of roller was set at 6 in. Borrow materials varied from sandy gravel to silty clay, but the bulk of the material placed ranged from slightly plastic brown clayey sands to grey or brown moderately plastic sand clays. Optimum moistures ranged from 9.5 to 14.5 percent dry weight.

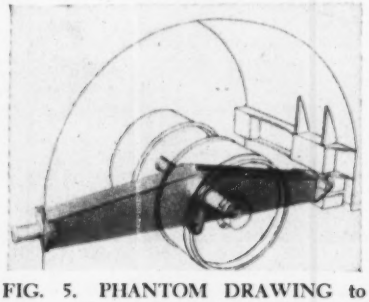


FIG. 5. PHANTOM DRAWING to show method of mounting each pair of wheels on the Ferguson unit. Mounting of the Bros model is similar.

After 380,000 cu yd had been placed with a tamping roller a change was made to the pneumatic roller, but no change was made in the number of passes, which was eight on the 6-in. lift.

Densities obtained were substantially the same for each type, being 93.1 percent of modified Proctor for the sheepsfoot as compared with 93.0 for the pneumatic.

• Roller specifications revised—As a result of experience gained on these operations, revisions were made on the specifications for pneumatic rollers for the compaction of earth embankments. The new specifications, dated April, 1952, require that such rollers shall have a minimum of four wheels equipped with tires of such size and ply that tire pressures can be between 80 and 100 lb under a 25,000-lb wheel load during rolling operations.

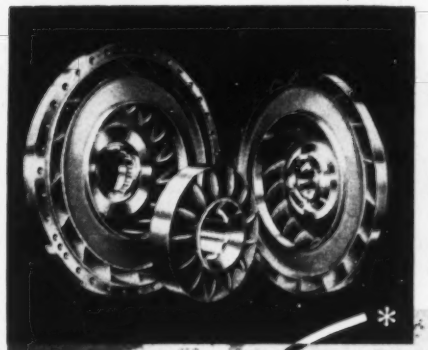
Wheels must be abreast and so designed that each will carry approximately equal loads in traversing unequal ground. Wheel spacing shall be such that the distance between the nearest edges of adjacent tires is not greater than 50 percent of tire when operations are being carried out under the 25,000-lb load.

Rollers are required to have a rigid steel frame and a body such that ballast loading may be varied to produce individual wheel loads ranging from 18,000 to 25,000 lb.

The entire assembly (roller plus tractor) must be capable of executing a 180-deg. turn on a 15-ft radius. Roller speeds have been raised to a maximum of 10 mph. This change is expected to result in greater use of rubber-tired towing equipment in place of crawling tractors.

Tamping roller specifications also have been changed to give the roller weight in pounds per linear foot rather than pounds per square inch of foot in contact with the ground. This avoids a controversy over the number of feet actually on the ground for those rollers having staggered arrangement of the feet. The loaded weight in pounds per linear foot of drums is usually specified as 3,500 and the empty weight as 2,000 in order to provide for adjustment in the field which will permit optimum compaction.

The same effect is obtained in the rubber-tired roller specification by the variation in tire pressure and wheel load. The allowable spacing between wheels is specified to prohibit equipment which would lose much of the effective compacting force by lateral shear or rutting of the fill.



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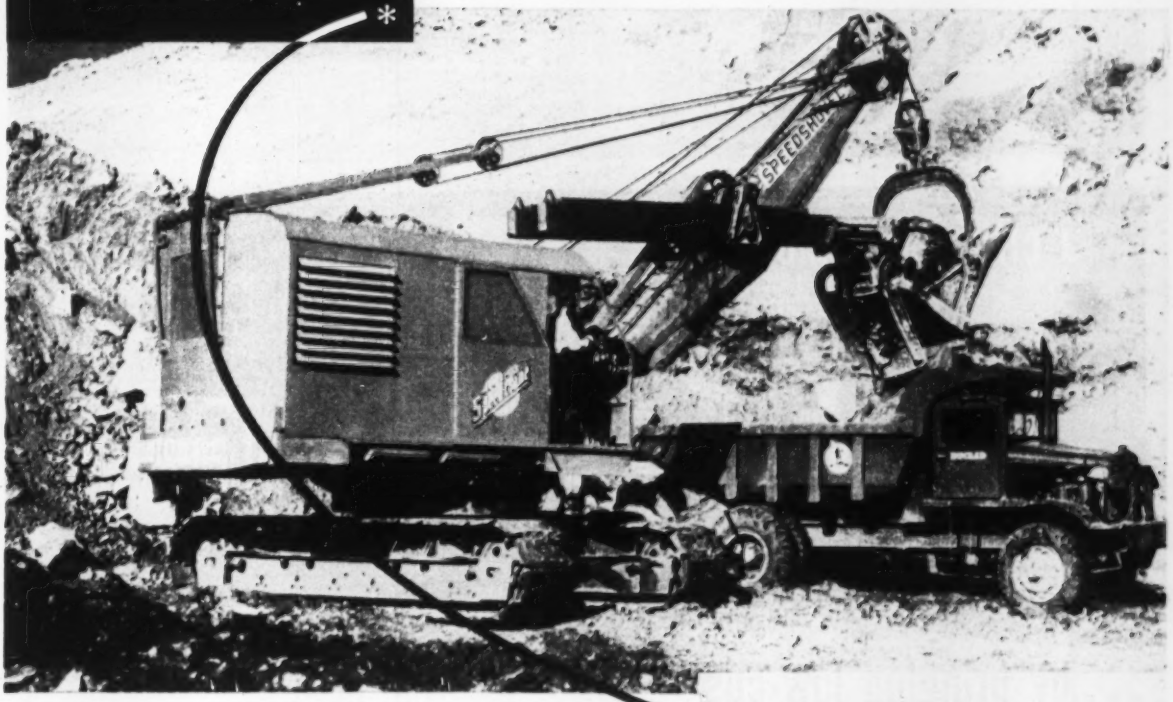

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HIGHWAY THROUGH PIRU GORGE was most difficult job of improvements on Ridge Route. Piru Creek was rerouted, eliminating two bridges which were on either side of Pyramid Cut (left foreground).

Six-year road modernization job is over

California rebuilds 75 miles of twisting mountain highway to handle heavy traffic

AFTER NEARLY SIX YEARS of construction—and motorist irritation—the 75-mile length of the famous Ridge Route through the Sierra Madre between Los Angeles and the San Joaquin Valley has been converted to a four-lane freeway.

The new Ridge Route is a far cry from the original.

Part of U. S. 99 and a main north-south artery, the winding mountain highway formerly was three-lane, with stretches of two-lane. It is still winding (about 40 miles of it run through rugged terrain) but many of the old curves have been straightened. Grades are about the same—a maximum of 6%—but there are fewer such grades. The original pavement was 15 ft wide on a 24-ft roadbed; now it's at least 54 ft wide.

Clean-up operations on the last five-mile stretch are still under way and acceptance is not due until the beginning of March. But since early January four-lane traffic has been possible all the way.

• **Long time happening**—The former, mostly three-lane highway was overcrowded soon after it was built in the early Thirties. The Division of Highways began planning for widening in 1940, but only 12 miles on the San Joaquin end were completed before work was stopped by World War II. In March of 1947 the first postwar contract to resume work on the mountain highway was let.

The Ridge Route got its name from the first two-lane highway through the mountains, completed in 1920, which literally climbed along the backbone of the range. When the three-lane highway was built, it moved down from the peaks into the valleys and through cuts, but still kept the original name.

In some cases on the new route the 30-ft, three-lane road was used to handle two lanes of traffic, and a 24-ft width was added for traffic moving in the other direction. Where existing pavement could not be utilized, two 24-ft widths of new pavement were added. A center dividing strip is 6 ft wide in the more mountainous portions; in areas where widening was not so expensive, it varies up to 42 ft. Paved shoulders eight and nine ft wide were provided on the outside edges of the entire road.

Careful studies were made with a view toward possible relocations, but in most cases it was decided that the old route couldn't be bettered. Possible earthquakes were an important consideration.

One of the apparently desirable new routings, which would have straightened out and shortened the Tejon Summit portion (which reaches El 4,183, highest on the ridge), was discarded when it was discovered that the new route would go directly along the San Andreas Fault, one of the most active in California.

Geological studies were an important part of design work. Formations under certain portions of the road have to be buttressed against transverse sliding. In some places excavation slopes extend as high as 200 ft vertically; benches were designed for the slope to relieve overburden weight and prevent possible slides.

CONSTRUCTION has delayed through traffic for almost 6 years on California's Ridge Route.

WIDER PAVEMENT—Original pavement was 15 ft wide on a 24-ft roadbed. New Ridge Route is at least 54 ft wide.

• **Tough job**—Probably the most difficult section of the improvement was a five-mile stretch through Piru Gorge, toward the northern end of the Ridge Route. Earthwork quantities involved amounted to 1,110,000 cu yd, and overhaul from cut to fill amounted to 15 million station yards. Widening of one portion—Pyramid Cut (El 2,266)—required excavation of over half a million cubic yards of a very hard shale rock. The cut face rises to a height of 310 ft from the bottom of the channel on one side of the road.

This stretch formerly included three bridges over Piru Creek, which wound back and forth across the route. It was cheaper to widen Pyramid Cut and relocate the stream bed than to widen all three bridges. So only one bridge was kept; the Piru now crosses once, and stays put.

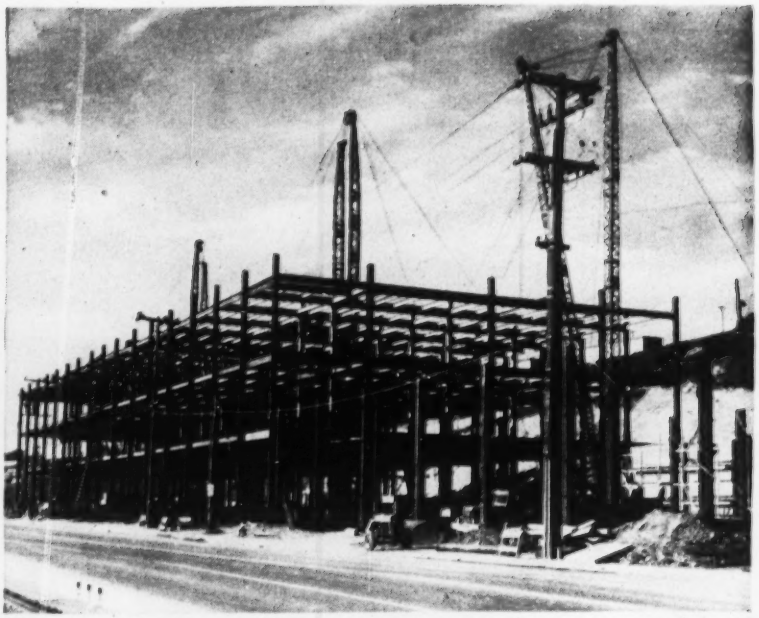
Hauling subgrade and surfacing material from commercial plants to the ridge would have been very expensive. Also much pervious material was needed. Pervious sand blankets were put on top of old pavement in areas where there had been trouble with water, and at the base of fills where there was evidence of water in old creek beds.

• **Traffic problems**—Traffic was a problem all during the renovation. The ridge carries a year-'round average of 9,200 motor vehicles a day, a large proportion of them trucks and semi-trailers. In summer the average is higher; on one July Sunday last year 12,000 vehicles were counted in 16 hours. Since the highway along the ridge is the only road through this mountainous area, there could be no detours.

In most places, half the road could be kept open at all times, and traffic kept moving, though slowed. But in cuts where there was danger of falling rock and earth during excavation, traffic had to be halted.

The entire project went according to schedule except for the last five-mile stretch, which was delayed almost a year. The reason for this was that the contractor who started it, Claude Fisher Co., ran into delays and financing troubles, partly because of heavy rains. The contract was withdrawn, put out for bid again, and relet to a new firm, A. Teichert & Son. Total cost of the two contracts was upwards of $1,200,000.

Other major contracts were: Winston Bros. Co., two totaling $3,059,400; Peter Kiewit Sons Co., $1,054,500; A. Teichert & Son, $2,131,100; and N. M. Ball Sons, two totaling $3,183,686. Altogether, there were 15 construction contracts, plus 12 more contracts for lighting, signs, stripes, etc. Total cost was $16½ million.



Welded steel frame to be enclosed in windowless concrete walls meets special requirements of . . .

. . . Navy's new radiological lab

CONSTRUCTION OF A SIX-STORY WINDOWLESS BUILDING is well under way for the U. S. Naval Radiological Defense Laboratory at the San Francisco, Calif., Naval Shipyard.

This type of construction proved to give substantial savings over conventional designs, and the Navy was able to construct a building with 25% more floor space. The building will house offices and laboratories for the study of thermal and nuclear radiation effects of atomic weapons and the devising of means of protection against such effects.

The structure is 109x414 ft in plan having 260,000 sq ft of floor space. The only exterior glass will be at the main ground floor entrance and in a penthouse cafeteria. There is no basement.

Original plans called for conventional multistory design. But early in the planning stage, the architect-engineer—Leland S. Rosener, Engineers, San Francisco—saw the advantages of windowless construction for the purpose at hand. The Navy was convinced of the wisdom of windowless construction, and detailed plans were prepared on that basis.

Here are the arguments used:

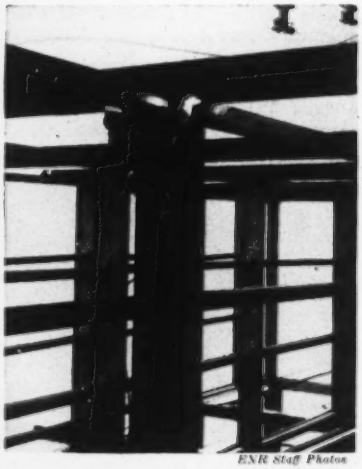
1. Arrangement of equipment makes greater use of available wall space. This factor alone saved 28,000 sq ft in the construction originally planned.

2. Illumination is more uniform throughout the building. And, as lights are needed in such a structure anyway, there is little or no additional costs for lighting.

3. Temperature throughout the building can be held more constant. This is important in conducting laboratory procedures and also adds a morale factor in so far as better health is concerned.

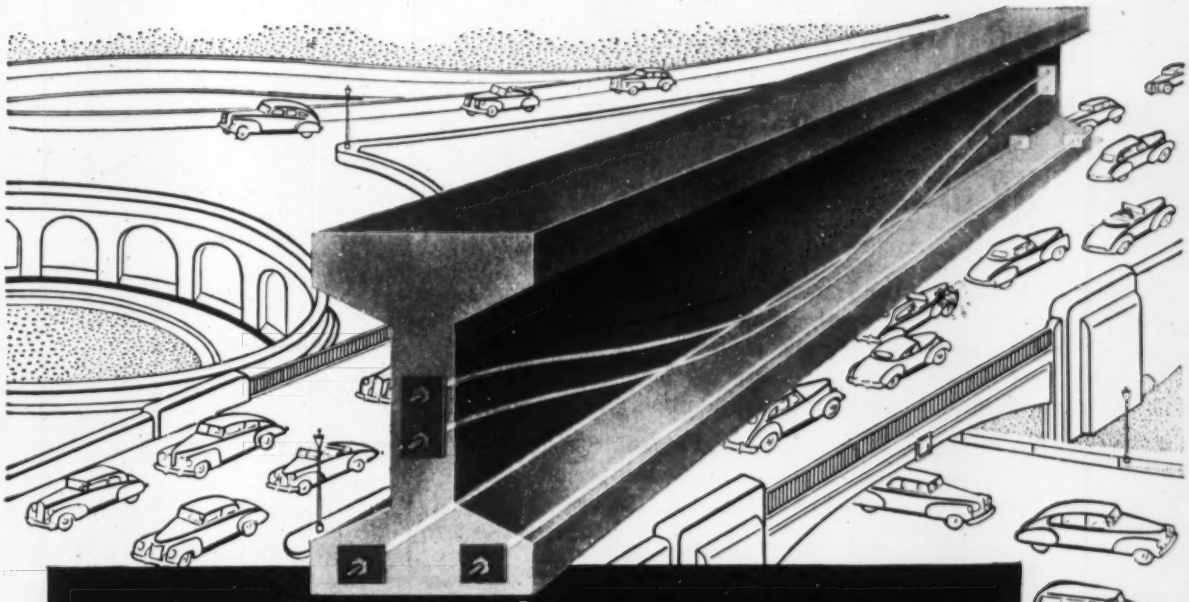
4. There is greater safety in event of a bomb blast because all windows would be potential secondary missiles.

5. Fuel costs for heating are favor-



ENR Staff Photos

WELDER HAD WORKED on exterior beam-to-column connection as frame neared completion last month.



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What Stressteel Does:

Stressteel Tensioning Bars now make prestressed concrete completely practical and competitive with other types of construction. Application of the prestressed principle saves on concrete and steel, cuts dead-weight, increases strength, allows longer spans and better space utilization.

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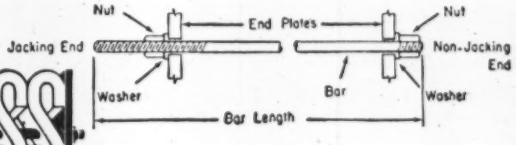

Where you use Stressteel Tensioning Bars:

In a wide range of structural applications including bridges, building frames, dams, retaining walls, pavements, poles and piles, roof slabs and beams. Use them, too, to reinforce existing concrete and steel structures and as tiebacks in construction of bulkheads.

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able because of the insulating qualities of concrete as compared with windows.

6. Maintenance costs are less—there are no windows to clean and less floor space.

Besides all these arguments, there was the possibility that a simple concrete shell would be cheaper to construct because of the simpler formwork involved. And, then there is the intangible advantage that workers will not be distracted by what they could see through windows.

• **Ventilation no problem**—Had windows been used, a ventilation system would have been necessary anyway, since the windows would in all probability have been fixed.

The nature of the use to which the building will be put is such that ventilating demands vary greatly from floor to floor. Air intakes for each floor are at the back of the building. All air is filtered and treated for odor control. Exhaust fans are located on the roof with an average of two 2,600-cfm fans, each powered by a 7½-hp motor, needed for each floor. No air is recirculated.

The climate in the San Francisco area is such that no humidity control is required. The heating and cooling elements of the ventilation system are designed on the basis of an outside low temperature of 30° F, an outside high temperature of 80° F and a wet bulb temperature of 65° F.

Heating is done by steam coils. Cooling involves use of reciprocating-type Freon compressors with a 75-ton unit provided on each floor.

• **Welded steel frame**—The building is designed to resist a 10% lateral force. This provides earthquake and blast resistance.

The solid exterior walls, varying from 6 to 12 in. thick, are used as shear walls to provide part of this lateral force resistance, but a substantial amount of it must be taken into the steel frame. This necessitates that particular attention be given to the moment connections between beams and columns. And, use of all-welded construction reduces the size of such connections over riveted construction, one of the primary considerations leading to adoption of welding.

Design live load is 100 psf except that the loading in some specialized areas is higher. In fact, there are areas necessitating a live load of 800 psf.

Except for certain specialized areas, no additional thicknesses of concrete are required as shielding from radioactivity. That's because the thicknesses of walls, floor and roof are considered adequate protection from radioactivity in the quantities used.

Because the old shoreline of San Francisco Bay runs right through the building, two types of foundations are required. Part of the building is supported on spread footings with a 7,000-psf design loading. The rest is supported on pile cluster footings using a loading of 40 tons per pile. Particular attention was paid to the design of the footings to eliminate any possible differential settlement.

• **Escalators**—The building is serviced by electric stairways because an analysis indicated a substantial saving over use of passenger elevators. Two such stairways are provided side by side and, in normal use, one operates up and the other down. However, during peak flow periods and in emergencies both stairways can operate in one direction.

The electric stairways are two-speed Westinghouse units. They will operate at high speed during peak load periods and at a more economical slower speed at other times.

There are several sets of emergency, fire-proof stairs in the building each served by a ground-floor door that for security purposes can be opened from the inside only.

Utilities are distributed through the building by vertical pipe chases located in four different places adjacent to corridors. Horizontal distribution of utilities is accomplished on the first and fifth floor. The lower set handles both first and second floors. Third floor utility demand is small as it is set aside for office space. Horizontal piping on the fifth floor supplies utilities for fourth, fifth and sixth floors.

An emergency motor-generator set is being installed to supply electricity in event of outside power failure. This unit will provide minimum lights, keep the exhaust blowers going, and provide power for the public address system. It is designed to be on the line eight seconds after a power failure, and it is anticipated that experience will show even quicker service.

All partitions in the building are metal to provide flexibility of use. An auditorium seating 250 people is situated on the sixth floor, with a cafeteria in the penthouse.

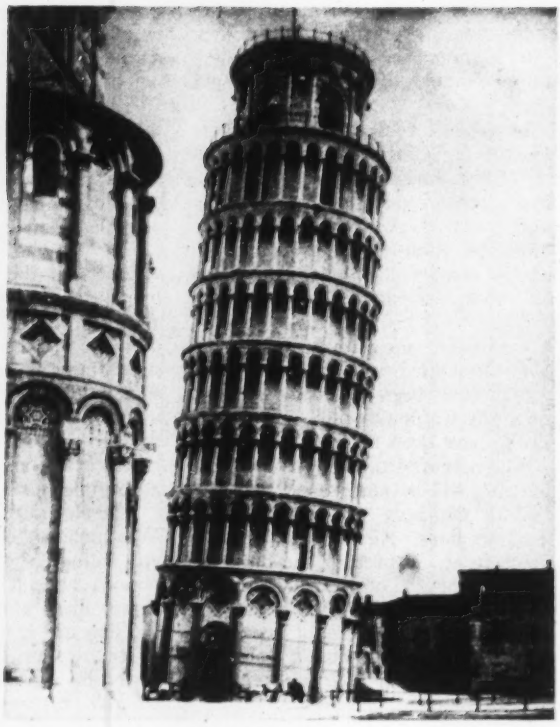
Capt. H. F. Ransford, CEC USN, is 12th Naval District Public Works Officer in general charge of the design and construction. Capt. H. H. Bagley, CEC USN, public works officer of the San Francisco Naval Shipyard, is resident officer in charge of construction at the site of the work.

Construction is being carried out under a $5.9-million contract awarded June 25, 1952, by a joint venture of Rothschild, Raffin and Weirick and James I. Barnes Construction Co. Meanwhile, the Radiological Defense Laboratory under the direction of Capt. L. L. Bird, USN, is continuing operations in semi-permanent shipyard buildings that will be restored to general shipyard use when the new structure is completed.

Not big enough—Mexico's new Olympic sports stadium, finished three years ahead of time (ENR April 17, 1952, p. 48), left a great many Mexicans unsatisfied and mystified. The announced seating capacity was 100,000 and that many tickets were sold for the stadium's maiden football game, but when the crowd got into the double-decked elliptical structure only 58,839 could find seats. A model affair, cut into a lava bed and made of reinforced concrete, the bowl was planned with an eye to the 1956 Olympics, and now Mexicans are worrying about the missing 41,161 seats.

Leaning Tower of Pisa

Why the famous Italian monument completed in the Fourteenth Century is still standing and what might be done to save it



Experience suggests "it should not be standing at all."

Charles B. Spencer
President
Spencer, White and Prentis, Inc.
Engineers and Contractors, New York

Editor's Note: This is the story of what happened when one of the nation's top foundation experts went on a European vacation. Challenged, as many engineers before him have been, by the unique and dangerous lean of Pisa's tower, he changed his original schedule to stay and examine it. Then he wrote a memo to himself on what should be done to arrest the increasing lean. This is the memorandum:

NOT ONE IN A HUNDRED persons has ever seen a structure out of plumb by an amount that he could see with his naked eye. The Leaning Tower of Pisa may be compared to a building 180 ft high whose base is at the building line, and whose top leans over the sidewalk, and projects out beyond the curb. No wonder the tourist neglects the beautiful cathedral nearby, and gazes in astonishment at the bell tower which, his experience tells him, should not be standing at all.

Why in fact did not the tower topple hundreds of years ago considering that its height is three times its diameter and that it has now become more than 14 ft out of plumb? Actually, it stands virtually intact, the only visible damage being a slight cracking in a few of the outside columns, which have been reinforced with steel bands. In the meantime, the nearby cathedral has undergone similar settlements, which by 1825 were so serious that part of it had to be taken down and rebuilt.

• **Leaning history**—The construction of the Tower of Pisa was started in 1174 under the supervision of a Florentine named Bonanno. The foundation consisted of a large ring of masonry about 20 ft wide and about 60 ft in exterior diameter, bearing on the soil, it is believed, only a few feet below ground level. The soil probably consisted of a wet volcanic silt, called in some accounts fine sand and clay, and if anything had been known at the time about the bearing values of soils, the tower would never have been built. No modern building code would assign to such a soil a presumptive value of more than about ½ ton per sq ft whereas the actual load under the tower foundation is about 8 tons per sq ft.

It is stated in some accounts that "many logs" were placed in the soil below the masonry. Whether these were placed as a mat or driven as piles is not known, but in any case apparently they added nothing to the support. By the time the equivalent of three stories had been erected, settlement had occurred, and the tower was tilting at an alarming rate. The cities of Florence and Pisa were not too friendly at the time, and ugly rumors of deliberate sabotage began to float around Pisa. Bonanno thought it was about time to leave town—construction was abandoned, and the tower remained three stories high for 60 years.

By that time it had settled into the ground sufficiently to consolidate the soil, and temporarily to arrest the settlement. It was with confidence, therefore, that Giovanni de Simone decided to finish the tower. As the work progressed, an attempt was made to straighten the structure by adding additional courses of masonry on the low side. Giovanni added another story, and it is believed that the settlement and tilting increased alarmingly. In any case, the work was stopped and Giovanni disappeared.

Nothing further was done for nearly 100 years, by which time continued settlement had developed new consolidation in the soil sufficient to cause the structure again to come to apparent rest. An architect of Pisa named Tomasso, then deciding that it was safe to finish the structure, designed a narrow belfry, made other minor changes in the plans, and proceeded.

As to further settlement and tilting during construction, we know nothing except that the practice of attempting to straighten the tower by adding masonry courses on the low side was continued until, on completion, the low side was nearly 3 ft longer than the high side.

The structure was finished in 1350, and we have every reason to believe that the settlement and the tilting, accompanied by the consolidation process, has continued over the 600

years to date. The structure is now more than 14 ft out of plumb, and while there is no record of its original elevation, it is my opinion that it has settled about 12 ft on the low side and about 8 ft on the high side. I believe that this amount of settlement proceeding at a slow rate over the centuries is what has saved the structure from complete collapse.

It is my opinion that the tower actually is supported on a truncated cone of consolidated soil, extending from the underside of the tower down to a clay layer about 35 ft below the surface, and about 90 ft in diameter at the latter level. If this is correct, unit load on the lower clay is less than two tons per sq ft, which such material should be capable of supporting.

Unfortunately, the loading is eccentric, and tends to become more so as the lean of the tower increases. The consolidated soil beneath the tower attempts to compensate by "bridging out" farther on the weak side. However, increased consolidation involves further settlement and further tilting, and the process will continue until the center of gravity of the tower moves beyond the danger point.

• What has been done—Within the tower, the Italian authorities have constructed a special room with a level floor about 30 ft above the ground. In this room they have placed a plumb line extending to the roof, an accurate level and seismographs to check on any earth movements that might be immediately disastrous. Continuous readings on these instruments show that the tower is increasing its lean at the rate of .04 in. per year. On this basis Italian engineers estimate that collapse will not occur for about 200 years. However, as it leans, its center of gravity moves towards the low side, so I believe the rate of lean will increase, and the tower must be declared unsafe within 100 years.

In 1932 the authorities tried cement grouting below the foundations. About 1,000 tons of grout was injected into the soil through holes drilled in the foundation. It was thought for a time that the process was successful and that the subsequent increase in lean could be attributed to bombs dropped in the vicinity in World War II. I do not believe, however, that the grouting had any beneficial effect. I am informed that recently an Italian contractor offered to demolish the tower, preserving the materials so that it could be rebuilt with its present lean, but on a firm foundation. I do not believe that this proposition was taken seriously since with the consequent loss of antiquity and with the lean produced by man instead of nature, tourist value would be lost.

• Less eccentricity is the key—Can anything be done to save the tower, which is rightfully regarded as one of the wonders of the world? The basic fact to be faced is that the center of the consolidated soil or subfoundation is always slightly eccentric to the center of gravity of the tower. The result is an overturning couple whose intensity is the weight of the tower multiplied by the eccentricity; the latter must indeed be very small, or the rate of lean increase would be much greater than it is.

The simplest way to resist this couple is to supply a force tending to produce rotation in the opposite direction. Four methods of supplying such a force suggest themselves:

(1) Produce a horizontal push against the tower on the low side.

(2) Produce a horizontal pull away from the tower on the high side.

(3) Increase vertical support under the foundations on the low side.

(4) Remove a portion of the foundation support on the high side.

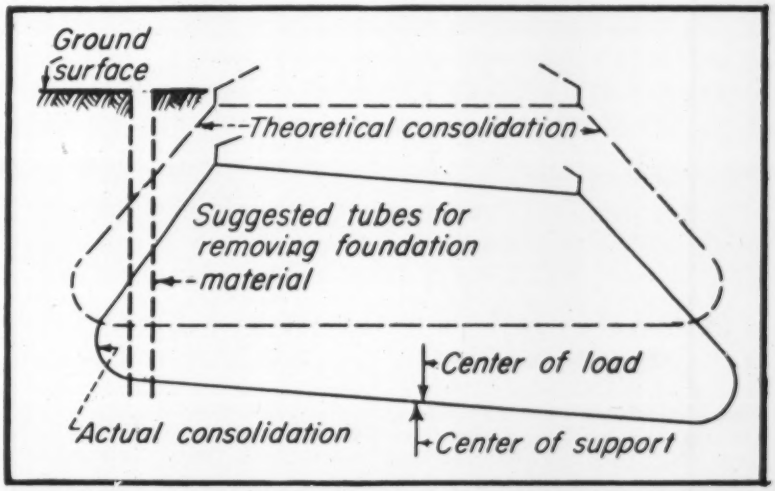
There can be no questioning the fact that a series of diagonal shores extending from the ground surface about 100 ft away from the tower to a point a similar distance above the ground will provide a beneficial horizontal component. Such shores would have to engage vertical beams spreading the load over a considerable area of the tower, so as to avoid damage to the masonry. The "heels" would be in unstable ground so that hydraulic jacks between the shores and the heels would be required to maintain uniform pressures. Obviously, the shores would be unsightly and, since they would have to remain in place many years, the "tourist" value of the tower would be reduced over a long period.

Similar results would be obtained by supplying a pull about ⅓ of the way up the tower. This might consist of cables about 300 ft long, engaging vertical beams on the tower, and attached to "dead men" buried in the ground. A tension of known intensity could be maintained in the cables, and continuous observation of the cables and the tower itself would determine how great a tensional force could be applied without danger to the structure. The procedure, as in the case of the shores, would have to be continued over many years, and, while less unsightly, might also reduce the tourist interest in the tower.

Additional support could be added on the low side by jacking hollow cylinders to the clay stratum using the tower as a reaction, filling them with concrete, and hydraulically transferring to them some of the tower load. This is the normal way of doing underpinning, a procedure which has been successful in hundreds of inadequate foundations. However, as already stated, the upper stratum in all probability is fully consolidated, and the additional supports would be carried to the lower clay where the tower load is already nearly at its maximum.

Nevertheless if such supports could be installed without disturbance, the structure certainly would be benefited. However, the risks involved are such that I think other methods should be tried first. There must also be considered the possibility of the underpinning cylinders encountering lumps of the cement grout installed in 1932.

• Removing high-side support best—The procedure that would seem most practicable, everything considered, is to take away some of the present support on the high side. This method



POOR FOUNDATION has been improved by consolidation, but the dangerous eccentricity of load and support needs to be eliminated. Careful and controlled removal of some of the foundation material on the high side is suggested.

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has little precedent (but for that matter neither has the Leaning Tower) and might be considered too radical. It is my opinion, however, that if carefully planned and executed it is certain to be successful.

Reducing the soil consolidation on the high side, by cutting away a part of the sub-foundation on that side, would move the center of the remaining support toward the low side and toward the center of the load. Any settlement on the high side resulting from the procedure would still further improve the situation. Carried to a point where the center of the foundation coincides with the center of gravity of the tower, the overturning couple would be eliminated.

• **How to do it**—The technique of "bleeding" the high side of the sub-foundation will have to be developed carefully. The desired result must be produced over a long period, say 10 to 15 years, since any quick change in conditions might result in disaster.

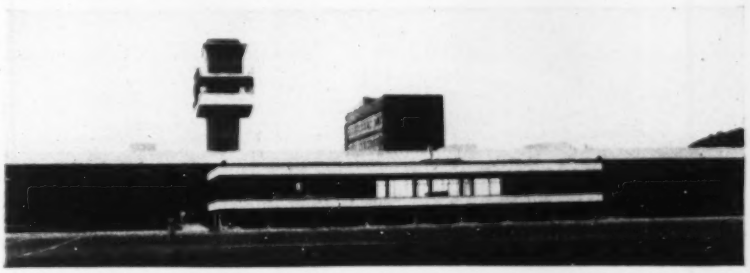
My suggestion is that operations be started at a point about 18 ft from the tower, which I believe to be within the limits of the consolidated area on the high side. A series of steel pipes should be sunk open-ended to the clay stratum, the material within removed, and the shell withdrawn. The sinking should be accomplished hydraulically against a dead-weight reaction, and the material removed by augers since hammering and jetting could have an adverse effect on the structure.

These holes actually will cut into the consolidated area, and, as the consolidation relieves itself, the center of the sub-foundation will move toward the low side. If no change is noted after a considerable period (not less than a year), additional holes may be installed a little closer to the tower. But, at first, it is necessary to do too little in the fear of doing too much. It is my opinion that no permanent beneficial results should be expected for at least ten years. No accurate computation can be made of the stresses involved so that the procedure will be largely one of trial and error.

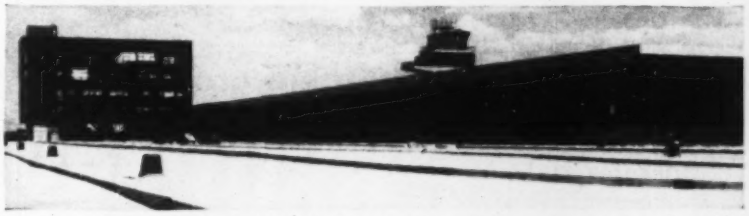
Any procedure used will have to include a means of checking the movement should the tower come back more than a very small amount. It might also be necessary to repeat the process should the tower resume its increase of lean.

Time would seem to be no object. The tower, with the little help suggested herein, should stand another thousand years. Up to now, it is a monument to the resourcefulness of nature, but its future, if it has a long one, must depend on the resourcefulness of man.

INTERNATIONAL



New terminal for the Mexican capital has glass-enclosed restaurant facing the runways. Five story office building rises behind main building.



Parking area back of terminal is well defined. Note drainage along curbs. Cars drive out of parking area by going under new five-story office building.

Ticket lobby is a long handsome expanse, air conditioned, and functional.

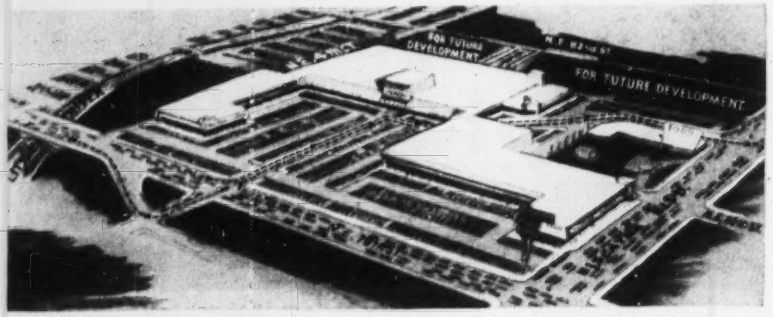
Modern airlines terminal in Mexico for fast-growing passenger traffic

One of the largest air passenger terminals in the world will begin operation some time after July 1 in Mexico City. Nearly a quarter of a mile long, the new $4¼-million terminal is a brick and glass structure with space for 24 DC-6Bs to unload simultaneously. A maximum of 17,300 passengers can be accommodated daily. Close to 2,000 cars can be parked.

Three separate structures actually make up the terminal facilities. One is a 5-story office building planned for use by immigration, customs, and civil aeronautic officials. The main terminal has a 333-yd long ticket lobby, with 20 ticket windows of three counter sections each, plus a mezzanine with offices. The third building is a glass enclosed restaurant facing the runways. Notable in the new structure is the wide expanse of glass used; in some places the sheets are 36 ft high.

London garages proposed

A scheme has been submitted to the British Minister of Transport to build nine underground garages beneath London's fashionable but crowded squares. The garages would take $8.5 million of the $33.5-million car parking plan that includes multi-story garages, and parking meters.



MIAMI SHOPPING CENTER provides shopping facilities and also helps alleviate a serious traffic problem. Proposed traffic flow is shown by arrows. Some turning traffic will be carried through the center to cut down congestion at the intersection.

Shopping centers continue growth

Miami project eases traffic bottleneck; another started in Princeton, N. J.

Suburban shopping center construction continues to be one of the hottest items in the postwar municipal news. This month, for instance, will see the start of construction on an $8-million project in Miami, Fla.; work started on a $5.3-million center in Princeton, N. J., last month.

Miami's center not only will provide shopping services but has been designed to relieve one of the city's worst traffic bottlenecks.

• **Traffic trouble and solution**—The center—said to be the biggest undertaken in Florida—will occupy a 20-acre site on the northwest corner of Biscayne Blvd. and 79th St., five miles from downtown Miami.

Biscayne Blvd. is also U. S. Highway No. 1, main traffic artery from the North into Miami. Seventy-ninth Street, which connects with North Bay causeway over Biscayne Bay into Miami Beach, is the main east-west highway in the northern part of Dade County.

The intersection of the two throughfares has proved one of Miami's most baffling traffic problems. Suggestions for easing the jam—from by-passes to tunnels—have remained in the planning stage and traffic still crawls through the intersection controlled only by a 4-way signal.

Planning for the shopping center was carried out with the cooperation of the Miami Planning Board and the traffic department of the Miami Police Department. It was obvious that provisions would have to be made to prevent any further traffic congestion.

Final solution was the addition of a four-lane by-pass running through the center. The by-pass will take south bound traffic off the boulevard two blocks north of the intersection and send it into 79th St. two blocks west; east bound traffic on 79th St. will be able to angle through the center and reach the boulevard two blocks north of the intersection. Motorists coming south on the boulevard and east on 79th St. will be able to turn into the shopping center three blocks from the intersection.

• **Center details**—The project will contain 300,000 sq ft of floor space in 38 stores and 100,000 sq ft of office space. The three main buildings each will be two stories, will be air conditioned and will be served by elevators.

Paved parking areas will hold 1,700 vehicles. Scheduled completion date for the project is September, 1954.

Construction is by the Sommer Bros. Construction Co. of Iselin, N. J., from plans of Architect Robert Fitch Smith of Miami.

Princeton gets into act

The new center under construction in Princeton is designed to serve an estimated 300,000 shoppers in the area between the urban centers of New York and Philadelphia. New York is 53 miles to the north and Philadelphia 43 miles to the south.

PRINCETON CENTER has a concentric store design around a central mall.

Five blocks of stores containing 40 store units—205,000 sq ft of floor space—are being built on the 28-acre site. Parking will be provided for 3,000 cars.

Architects Ketchum, Gina and Sharp of New York laid out a concentric store arrangement around a central landscaped mall to provide shorter walking distances from the peripheral parking area. One reason for the design is a zoning ordinance limiting traffic access to one street.

General contractor is John McShain Inc. of Philadelphia, Pa., and Trenton, N. J.

Housing plans delayed in Portland, Ore., for study

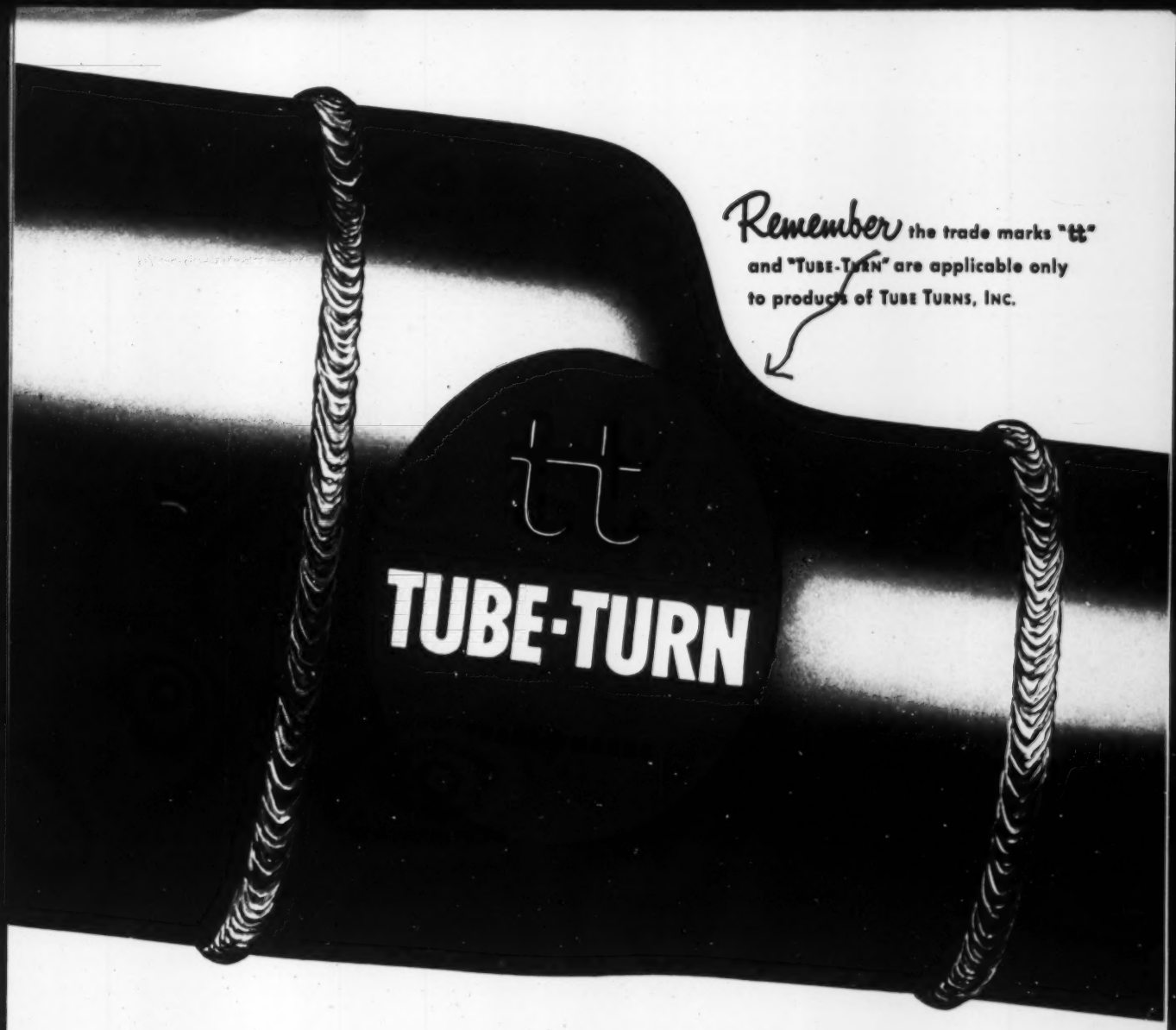
Portland, Ore. urban redevelopment plans, over which pro and con factions have been building up a head of steam since voter refusal in November to authorize financing bonds, have been diverted into a study stage by Mayor Fred L. Peterson.

There is a possibility that legislative action sponsored by public housing opponents may mean the end of the controversial 44-block Vaughn St. project.

Within a few short weeks the whole question has changed from a simple problem of technicalities to a major municipal policy issue.

A few months ago the Portland Housing Authority's financing offer—to put up Portland's estimated $1.5-million share of the Vaughn Street project's $7-million net cost—had revived the project plans from the November ballot defeat. Then PHA commissioners moved to build 200 low-cost rental units, they declared would be needed to house that many tenant families faced with evacuation from the Vaughn Street area.

Public housing opponents, citing the electors' defeat of a housing proposal two years ago, kicked up so much dust that PHA rescinded its entire financing offer and merely declared itself in favor of both the redevelopment and housing questions, each to be determined on its merits. But within a few days the same PHA commissioners thought better of it, and again pledged financial support to the Vaughn Street project—but this time only to the extent of



Engineered FOR SMOOTH FLOW

TUBE-TURN Eccentric Reducers are designed with strong knuckle contours and as gentle transitions from large to small diameters as possible. In addition to providing smooth inner walls at the joints, these features hold turbulence and pressure loss to a minimum.

Efficient piping flow reduces pumping power requirements, and investment in equipment. For efficient, leakproof piping, specify welded systems—using TUBE-TURN Welding Fittings and Flanges.

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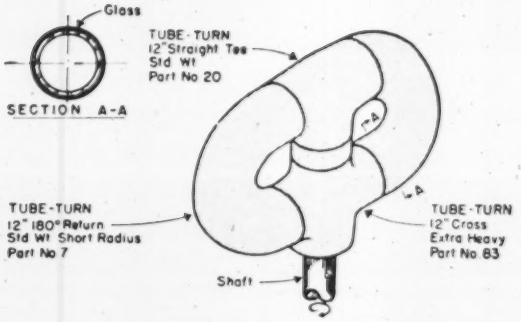
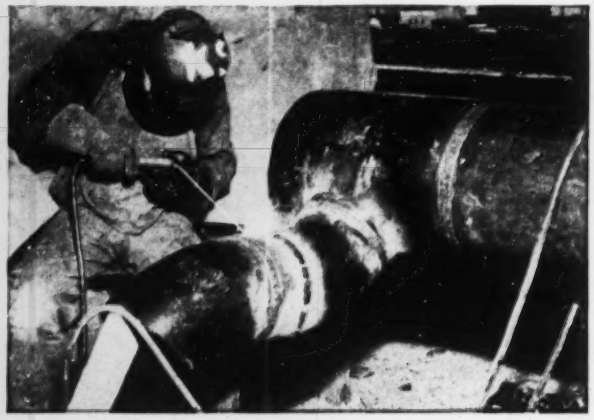
HELPS SOLVE A VIBRATION PROBLEM

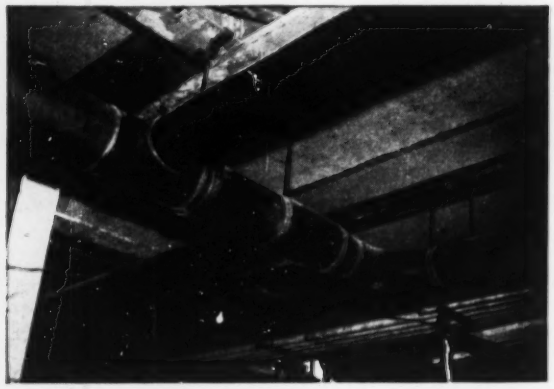
TUBULAR CONSTRUCTION often solves tough machine design problems and here, as in piping problems, Tube Turns' Engineering Service is ready to help you! For example:

Vibration was cracking the glass coating of a plate type agitator for a brine tank in a chemical plant. After repeated replacements, the engineers decided to switch to tubular construction and called in Tube Turns' Engineering Service for design assistance. The resultant design, shown in the sketch, embodies great rigidity and is not affected by the vibration. The expensive maintenance caused by cracking of the agitator's glass coating was eliminated.

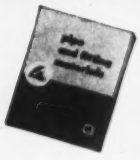




FABRICATION IS FAST. Field or shop fabrication of piping assemblies is easier when welders can count on the dimensional accuracy of TUBE-TURN Welding Fittings. True circularity and uniform wall thickness assure perfect lineup and fit.



AT GENERAL ELECTRIC. Two 16-inch steam mains, at boiler plant of the new G-E Appliance Park in Louisville, will help distribute 900,000 pounds of steam per hour efficiently. Welded piping, using TUBE-TURN Welding Fittings and Flanges, was specified for all critical lines in the new plant: high and low pressure steam, gas, domestic and mill water, and compressed air.



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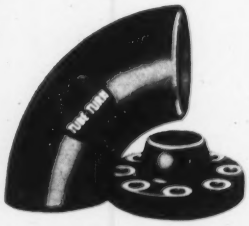

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TUBE TURNS, INC.

LOUISVILLE 1, KENTUCKY

$1 million. That was where the issue stood when the offer went before the city council March 11.

Before a crowded chamber could start tossing brickbats, Mayor Peterson announced he was referring the PHA offer and the whole question to his own committee of public safety. "This council is not going today into one of those long drawn out matters in which two groups of people fight it out with no knowledge of the facts," declared the mayor. He added the study would take "quite some time" and promised a hearing would be set two or three weeks after return of the study to council.

• **Legislature may act**—The delay may mean public housing opponents will be able to play a top trump card later in the form of an Oregon legislative act which would require voter approval of any housing or redevelopment proposal. The bill was still in the House committee on local affairs, but the legislature is getting anxious to close up shop. In the rush the bill may come out with a companion measure, both being expected to pass.

House Bill 470 would require an approving vote on projects by the people of an area concerned. Its backers have included an exception—admittedly with the Vaughn Street plan in mind; the provision involves a time limit. Those favoring that plan believe this time factor, now that a city decision is delayed, may prove an effective barrier. The exception would permit any city or county to go ahead with projects for which it already has committed financial obligations if this is done within 90 days after effective date of the legislation.

The companion bill is relatively inoffensive. It would enable county governments to take measures against property use which might be considered a nuisance.

Downtown garages create new noise problem

Operators of two multi-tiered pigeon-hole parking structures in downtown Portland, Ore., have been given until June 10 by the city council to abate noises that tenants of nearby office and retail buildings had successfully argued were a nuisance.

Representatives of Peters Co., builders of the open steel girder units, report that metal-to-metal contacts are being insulated against noise and engineering studies are being made to reduce the whine of a hydraulic pump used to lift the vehicles.

Briefs from the YEOMANS GUARD

*S.S. John G. Munson. New Great Lakes Carrier Relies on Lubri-Vac**

Up and down the foaming blue-water highways of the Great Lakes, the 666-foot steamer, John G. Munson, butts her way, carrying limestone from northern peninsula quarries to the steel mills; and in the Munson's engine room two Yeomans heavy duty bilge pumps tend rhythmically and dependably to their job of pumping out the drainage normal to engine and boiler rooms.

This huge craft enjoys two distinctions, both important: one, it is the largest self-unloading carrier in use on the Lakes; and two, it is the only carrier on the Lakes whose bilge pumps are equipped with Lubri-Vac* lubrication system.

Lubri-Vac is a method that provides positive lubrication of the radial bearing of a vertical wet pit centrifugal pump—and that bearing is the heart of the pump.

Two years study of working installations prove that Lubri-Vac has reduced bearing failures and pump servicing by 95%; and in laboratory tests Lubri-Vac pumps have handled abrasive mixtures (sand, fly ash, filings, emery dust) without fazing the bearing.

It's not unlikely that the John G. Munson will set new records for limestone tonnage; and it's likely that her bilge pumps will set new records for smooth trouble-free performance.

Built by Manitowoc Shipbuilding Co. for Bradley Transportation Line, carriers for the Michigan Limestone Div. of U. S. Steel.

The Yeomans Guard, published several times a year, is a compendium of news and useful information covering the pumping of materials and the treatment of wastes, both domestic and industrial. We shall be pleased to send you the current issue if you'd care to have it. Ask your local Yeomans Representative—listed in the telephone book yellow pages under "Pumps"—or write direct.

Good reading: A Lubri-Vac bulletin. Write us.

( ) Please send Lubri-Vac bulletin

* *Lubri-Vac System—Pat. Pending*

"Tomatoes a la Yeomans" Brought Peace To The Canneries

Next time you face up to tomatoes in any of their many palatable forms, think of clean, efficient, modern canneries in which Yeomans pumps are looked upon as indispensable equipment.

A Yeomans pump's job in a tomato cannery is to handle wastes—dirt, vines, skins, cores, and damaged fruit accumulated from washing, sorting, and peeling.

There's one omnipotent factor in the cannery business—Old Lady Nature. She calls the crop-time. Canning season is five to nine weeks. Every lost hour—in harvesting, on the docks, in the plant—means spoilage, loss of that inimitable off-the-vine flavor, punishing cuts in profit.

That's why dependable mechanical equipment is an absolute "must," and that's why canners are going Yeomans in large numbers.

In the past, pumps of positive displacement type were generally used for waste handling. Result: frequent break-downs of clogged pumps—time consuming, exasperating, costly.

Harassed beyond endurance by disastrous pump failures, several tomato canneries tried Yeomans pumps—and peace settled down on a troubled industry.

The hero of this triumph is the Yeomans "Skip-Pit" Pump—a vertical wet-pit pump designed to handle wastes containing grit and abrasive material.

That's about the story, wastes are taken by conveyor belt and water drains to a sump outside the plant; and the Yeomans pump delivers them to drying beds some 200 feet distant.

( ) Send Bulletin 3-8000—Wet-Pit Centrifugals.

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#16 of a Series

BAYTOWN TUNNEL

Baytown, Texas

Gen'l Contr.: Farnsworth & Chambers
Excavation: Associated Contractors

COMPLEX DRAINAGE PROBLEM SOLVED 40 FT BELOW CHANNEL

ENGINEERS on this job faced a two-fold problem. Existing tube (see photo)—running across ship channel and through dike—lay on a bed of uniform pea gravel, so that hydrostatic pressure acted through the gravel into working area.

• Hence it was necessary for the Griffin wellpoint system to tap this gravel "pipe-line" and shut off flow from channel—while simultaneously lowering 40 ft of ground water. This two-fold task was successfully mastered, through a year of continuous pumping.

• The soil was laminated: silty sand, tough clay and shells. These obstacles were overcome with a drill-rig and sanding casing.

• Photo shows tunnel approach at South portal. Operation was duplicated at North portal.

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In Canada: Construction Equipment Co., Ltd.
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State code gaining favor in New York cities

New York State's "performance" building code found its biggest champion to date with acceptance by the city of Binghamton—pop. 81,000. This is the sixtieth municipality to take such action; about 350 "specification" type codes are still being used in other local governments. Adoption of the new code is optional with municipal officials.

The performance-type code was drawn in the interests of building economy and improvement of building methods (ENR, May 17, 1951, p. 35). Rather than describing types of material and construction (as in the specification-type code), it defines objectives to be met in building without freezing into law the specific methods for attaining them. The code permits use of modern technical methods and makes performance the test of acceptability of new materials.

• Code manual—To facilitate use of the code—since it does not specify definite materials or methods—the State Building Code Commission issues a Code Manual, which indicates acceptable methods of construction but does not require architects and builders to follow those suggested. All methods, materials and equipment which meet the functional requirements of the code are allowed.

Arizona sewers flooded, air-conditioning hit

Phoenix, Ariz., has a switch on an old air-conditioning story—excessive water use is not so much a supply headache as it is a sewer problem. High cooling-unit runoff is overloading the sewers.

Taking heed, city officials of Mesa, Ariz., passed an ordinance requiring operators of commercial refrigeration units to construct cooling towers by June 1.

Chicago digs for underground garage

Chicago is digging in—and out—to provide underground parking facilities near the Loop (city's business district).

Traffic on main north-south thoroughfare, Michigan Ave., has been diverted around the Grant Park site to permit construction of facilities for 2,500 cars. The avenue is expected to be back in its regular location by the end of the year. (Wide World photo)

Arkansas bridge judged to be state property

The Main Street Bridge at Little Rock, Ark., a 2,000-ft span across the Arkansas River between Little Rock and North Little Rock, no longer is an orphan.

The Arkansas legislature has vested title to the bridge in the state highway commission, ending confusion which resulted when no governmental unit would claim ownership and responsibility for maintenance and repair (ENR May 22, 1952, p. 24).

Assignment of the title will become effective June 10.

The bridge is the second-busiest traffic spot in Arkansas, carrying an average of more than 27,000 vehicles daily. The mystery of its ownership popped up early in 1952 when a truck punched a hole in a bridge railing. Officials of Little Rock, North Little Rock, Pulaski County and the state said they didn't own the bridge. The improvement district which built the bridge at a cost of $1.3 million in 1924 had been dissolved and couldn't claim ownership.

Pulaski County Judge Arch Campbell, a civil engineer who didn't like the way the handiwork of his profession was being kicked around, stepped in and ordered the bridge repaired with county funds. He agreed to maintain and repair the bridge until ownership was decided.

Public works department makes film good for TV

A documentary film titled "The Waters Around Us" has been produced for the New York City Department of Public Works and released for television as well as "live audience" showing. It dramatizes city efforts to treat its sewage. The picture story features the Owls Head treatment plant, completed last year.

Narrated by radio and TV commentator Kenneth Banghart, the 25-minute picture has a brief introduction by Commissioner of Public Works Frederick H. Zurmuhlen.

This documentary treatment of the subject is a departure from the more elaborately photographed promotional-educational films now in circulation on this subject. It hasn't a single animated flow diagram. It simply, almost starkly shows people at work—first building, then operating the Owls Head plant.

Ask the man behind the gun . . .

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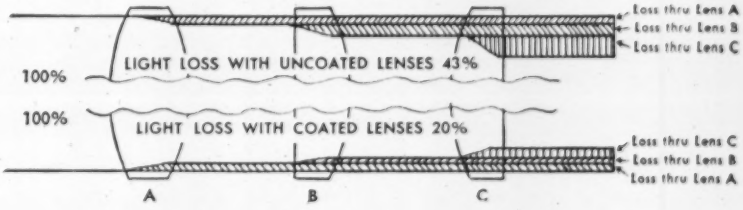
Model 3000, $185.00,* complete with tripod.

with a White Universal Level-Transit

HERE'S what coated optics can do for you. You can put in a full day without eyestrain or headache. There's less chance for a mis-reading. You get a clear, sharp sight — not a fuzzy image. What's more, you get your reading in far less time. Check this diagram. See for yourself how coated optics pass through up to *40% more light*, provide a clearer image contrast.

COMPARISON OF LIGHT PASSAGE



And there's more!

White Universal Level-Transits also offer you internal focusing, guarded vertical arc and ball bearing race which insures smooth operation, even in sub-zero temperatures. Check one out on your next trip. You'll soon be convinced a White can make your work faster, easier, more accurate. Write for Bulletin 1053. DAVID WHITE COMPANY, 315 W. Court Street, Milwaukee 12, Wisconsin.

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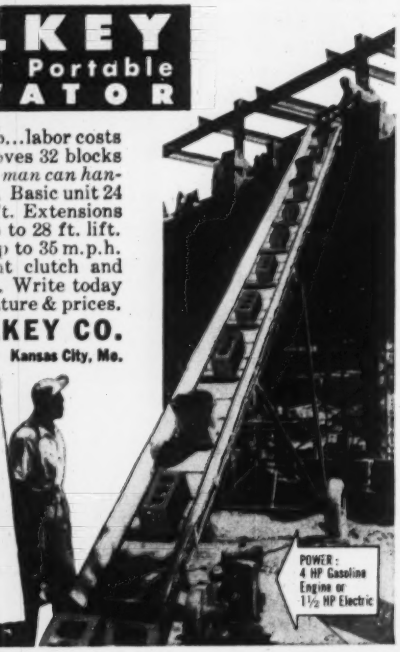

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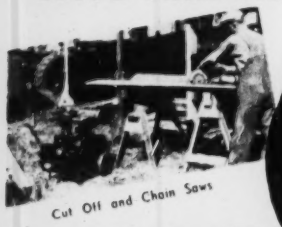
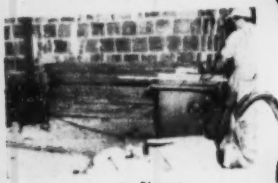
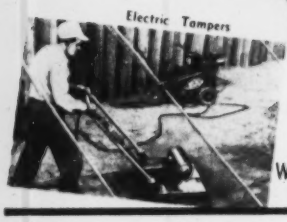
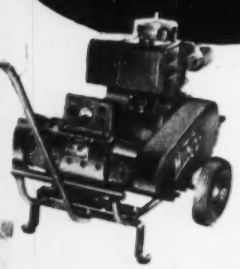
SAVE TIME with . . . . . Economy-Engineered WINCO ENGINE GENERATORS









Why burden your costs by using hand tools on jobs away from accessible power? WINCO portable Economy-Engineered Generators supply ample power for cost-cutting electric saws, drills, planers, routers, tampers, pipe threaders — and lights, too! Low-cost construction demands portable electric power — WINCO Generators provide it efficiently and economically for every job!

MODEL 4500 — 2500 Watts A.C. on "Speedy-Shift" Portable base. Other models 500 Watts to 10 KW. Prices start at $214.00. Write for details.

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MUNICIPAL

City authorizes mining to speed sewer job

Complaints over blasting activities that caused a two-month delay in the Lloyd Road sewer project in Euclid, Ohio, may cost the city an additional $62,000. The city council has authorized the mayor to enter into a supplementary contract with the National Construction Co. for that amount to cover the purchase and use of a mining machine for the rest of the sewer job. Existing contract for the job is for $775,000.

Construction was halted by the council Jan. 5 when residents near Lloyd Road complained that their homes were being damaged by the underground blasting which was carried out on the 10-ft diam. sewer job (ENR Jan. 29, p. 50).

Mayor Kenneth Sims said the new machine and its equipment probably would cost the company about $85,000. Engineers expect to offset part of the cost of the sewer by using a rectangular instead of a circular tunnel as originally planned.

Municipal briefs . . .

• **Airport on lake bottom**—Cleveland, Ohio, may have an airport on the bottom of Lake Erie if recent proposals go through. Plans for expansion of Lakefront Airport call for a dike extending into the lake with fill behind to build up acreage. Now engineers propose eliminating the fill to save money and preparing the exposed lake bottom for runways.

• **Expressway approved**—The entire proposed expressway system for Milwaukee, Wis., 24 miles at a cost of $124 million—won approval of the city's common council. The council's decision ended a seven-year battle and cleared the way for attempts to work out a financing plan among city, suburban, county, state and federal governments.

• **Canadian housing** — Engineered Buildings Ltd., will begin work this spring on a $2.5-million, 320-unit housing project in the southern part of Regina, capital of Saskatchewan. When completed, the project will be administered by Gladmer Developments Ltd.

• **Florida water**—The city council of Fort Myers, Fla., has voted $475,000 in revenue bonds to finance water system improvements recommended by Black and Associates, Gainsville firm of consulting engineers.

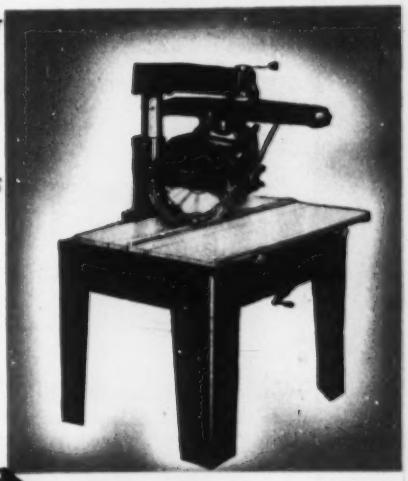
"On-the-Job" Sawing Center Costs Only 10¢ per hour with DELTA Radial Saw

$1,300,000 construction with saw investment of approximately $400 at Metcalfe-Hamilton Construction Companies in Kansas City, Mo.

A job-site sawing center with Delta radial saws mass-cuts material, frees carpenters for actual construction, says Raymond D. Sharpe, manager of this project to erect three apartment buildings totaling 172 units.

"For excellent performance, ease of operation, safety, versatility and economy, Delta radial saws can't be beat," says Mr. Sharpe. "Our on-the-job installation costs only 10 cents per hour—does cross-cutting, ripping, beveling, dadoing and general mill work. In 4000 hours of hard use, the only maintenance, except for blade wear, was one new switch."

Here, truly, is the way to cut costs, as live-wire builders the country over are discovering to their profit. Use the coupon to get complete data on Delta radial saws.



ONLY WHOLLY NEW RADIAL SAW ON THE MARKET—Check these advantages

1. Exclusive—the saw blade is always **above the table,** swing a full 360° for **any** angle.
2. Controls up front, for ease and safety
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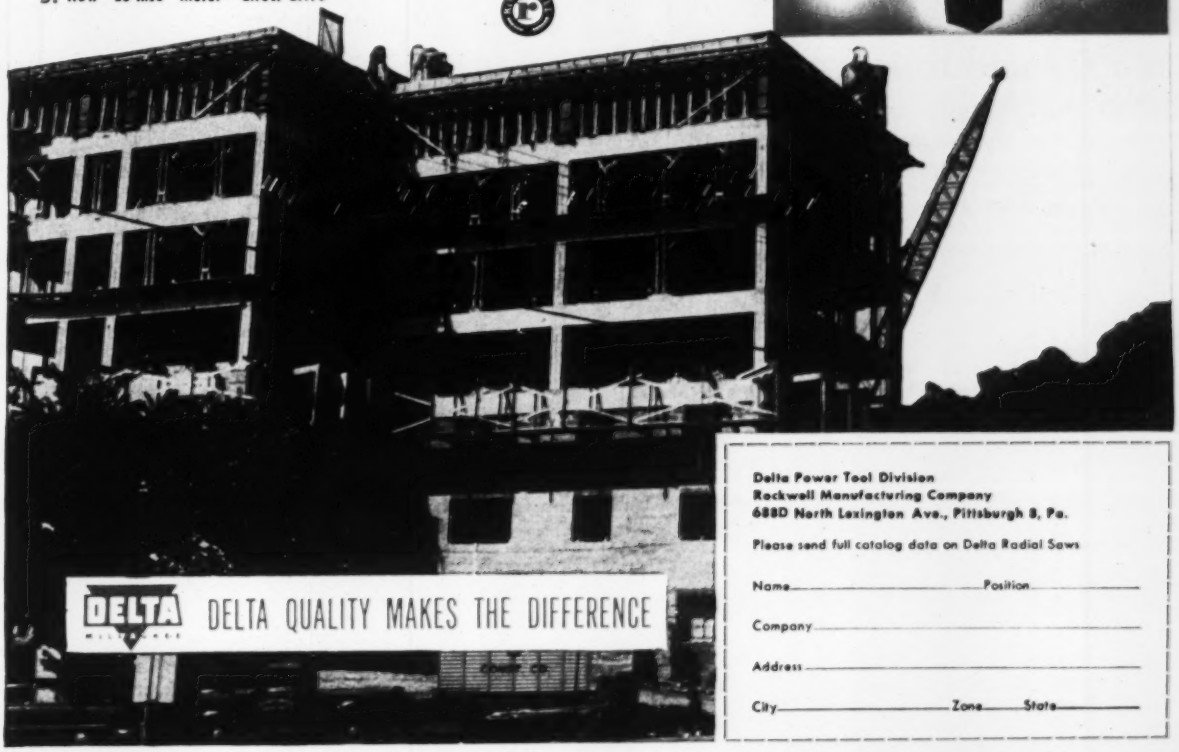
Another Product of **Rockwell**



Delta Power Tool Division
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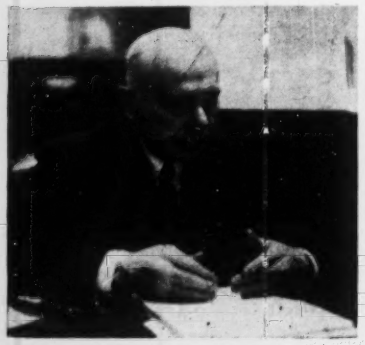


"We are demanding at least eight times as much service from our roads."

"It's logical to borrow for important needs, and repay from user income."

ONLY 25% of present interstate highway mileage is fit for today's traffic, says Thomas MacDonald, retiring Commissioner of Public Roads.

MacDonald retires as Commissioner of Public Roads; F. V. du Pont takes over

But the new commissioner probably won't have such a free hand. Secretary Weeks will supervise federal-aid grants

Continuance of federal-state cooperation in the highway field stands out above all other recommendations that Thomas H. MacDonald, retired Commissioner of Public Roads, left with his Washington friends this week. After 34 years as head of the federal government's highway agency, the former commissioner took off promptly for College Station, Tex., to begin his new job of developing a transportation institute for the Texas Agricultural and Mechanical College in collaboration with the state highway department.

Francis V. du Pont, for many years chairman of the Delaware Highway Commission, moved into the post vacated by MacDonald. So far as could be learned last weekend, Commerce Department officials and the new Commissioner of Public Roads have no plans for suggesting changes in the existing statutory relationship between the federal government and the states.

Commerce Secretary Sinclair Weeks and his Undersecretary for Transportation, Robert B. Murray, want to make an intensive survey of the Bureau of Public Roads to improve its economy and efficiency. There are no plans at the moment to study the possibility of having the federal government retire from the gasoline tax field. The demand for these revenues is too large at present.

• **No free hand**—One thing seems sure: du Pont is not going to have the free hand in running BPR that MacDonald did. More than half of the Commerce Department budget goes for the construction of federal-aid highways, and Secretary Weeks has no intention of letting that amount of money go out without supervision from the top. At the same time, he agrees there can be no reduction in the $575 million of federal aid authorized for each of the next two fiscal years.

First and foremost among the things MacDonald talked about before his departure was the importance of continuing "the relationship that has been established between the individual states and the federal government on the highway program."

In his words, maintaining that relationship is important for two reasons: "first, it is a workable plan to accomplish a continuing program that involves both local and national services; second, it sets a pattern in harmony with the concepts of federal government."

MacDonald put emphasis on the second point. The original Federal Highway Act of 1916, he said, "recognized the sovereignty of the states and the authority retained by the states to initiate projects. All through the legislation since then, the same mechanism of checks and balances has been maintained evenly so that the

To get better prints... faster

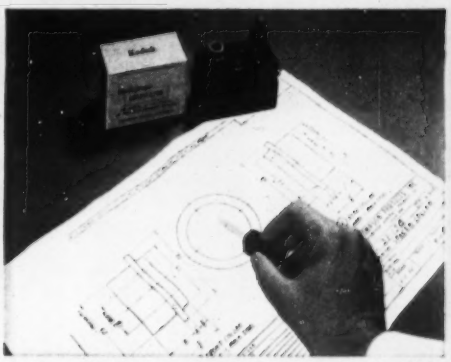
Tapco Plant, Thompson Products, Inc. uses Kodagraph Autopositive intermediates in print production.

The Tapco Plant knows full well that illegible shop prints pave the way for costly reading errors; knows, too, that Kodagraph Autopositive intermediates are low-cost insurance against such a possibility.

It therefore reproduces its more critical and complex jet and valve drawings on Kodagraph Autopositive Paper Translucent and thus obtains—quickly and easily—sparkling "masters" for print-making which have dense photographic black lines on an evenly translucent, premium-quality paper base; *which* will produce highly legible whiteprints time after time at *stepped-up* machine speeds.

Extremely fine-detailed drawings are reproduced on Kodagraph Autopositive Film, which captures the faintest detail . . . keeps close lines from "filling in" . . . and produces top-quality photographic intermediates which have extremely fast print-back speeds.

No negative step . . . no darkroom handling. Kodagraph Autopositive Paper and Film are handled in exactly the same manner . . . produce positive photographic intermediates *directly*. First, they are exposed in one of the Tapco Plant's direct-process machines—or in a photocopy unit. Then, they receive standard photographic processing. A fast, convenient room-light operation all the way. And no new equipment needed.



Autopositive intermediates save creative drafting time. Tapco Plant makes necessary changes in its basic designs without costly redrafting by (1) making Autopositive prints of the original drawing; (2) removing the unwanted detail from the Autopositive reproduction with eradicator fluid. Then, the draftsman has only to add the new detail . . . and a print-making master is ready. *One* which will produce highly legible prints without confusing "ghost" images in the eradicated area.

Autopositive reclaims "unprintables." Many old drawings that have lost line density or are soiled or torn are transformed into print-making masters by reproducing them on Autopositive Paper or Film. Stains and crease marks are dropped out . . . weak detail is made more legible—saving hours of redrafting. Autopositive Paper is also used to duplicate a variety of office records, non-translucent vendor prints, etc.

Kodagraph Autopositive Materials

"THE BIG NEW PLUS" in engineering drawing reproduction

Write today for a free copy of "Modern Drawing and Document Reproduction." It gives complete details on the revolutionary line of Kodagraph Reproduction Materials, which you, or your local blueprinter, can process conveniently, economically.

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Industrial Photographic Division, Rochester 4, N.Y.

Gentlemen: Please send me a copy of your illustrated booklet giving the facts on Kodagraph Reproduction Materials.

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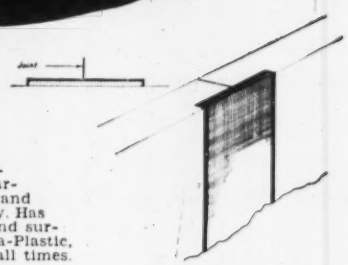
Kodak
TRADE-MARK

Servicised Premolded Para-Plastic* for Effective, Low Cost JOINT SEALING

TWO TYPES:

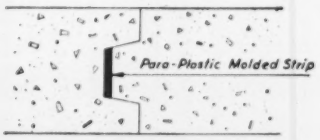


1. PARALATERAL Wide Strip

For sealing vertical construction or expansion joints in Retaining Walls, Abutments, Wing Walls, Foundations, etc., particularly when one side will be backfilled and protection from water seepage is necessary. Has rigid backing of asphalt joint material and surface and both edges coated with Para-Plastic, which maintains bond with concrete at all times.

2. MOLDED STRIP

Para-Plastic Sealing Compound is molded into strips for sealing keyed construction joints and cracks or breaks in vertical concrete surfaces. Concrete poured against the strip, after setting up, will bond with strip to form watertight seal.

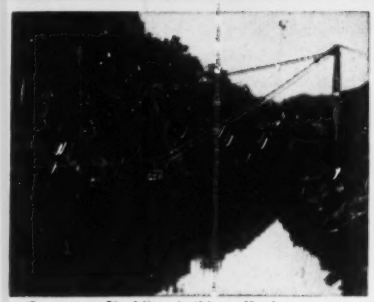


Write for complete details on Servicised Products for the construction industry. See our Catalog in Sweet's.

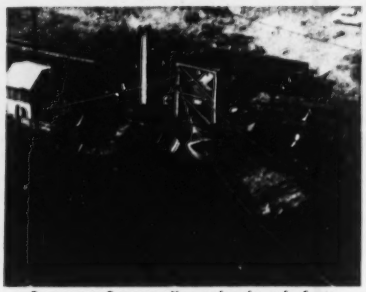
*Para-Plastic is one of the many Patented products developed by Servicised Products Corp. for the construction industry.

SERVICISED PRODUCTS CORP.
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

More Yardage with Less Labor



Sauerman Slackline builds cofferdam across gorge on river



Sauerman Scraper digs volcanic ash from hill and loads into cars.

How Sauerman Machines Cut Costs

With one man at the controls a Sauerman Scraper or Slackline Cableway can reach out 1,000 ft. or more and dig, haul and dump sand, gravel or other bulk material. Simple operation! Economical use of power!
A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for varied ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

• Write for Catalog of Sauerman Equipment for work you are interested in and let us assist you with your problems.

SAUERMAN BROS., Inc.
532 SO. CLINTON ST. CHICAGO, ILLINOIS

states and the federal government both have to agree before they can accomplish a positive program."

• **Overloaded**—The big development of our highway system began in 1920-21, MacDonald recalled. "By 1935, the primary federal-aid system of 232,000 miles had been surfaced, but only to standards considered adequate for that period. Those roads are still largely in use. But we are now demanding at least eight times the service from our roads as in the base period of 1921-30."

As an example, MacDonald called attention to the fact that less than 25 percent of the mileage on our main interstate system is adequate for today's traffic. More money is needed to improve our highways, MacDonald said, "but that does not mean necessarily an increase in taxation."

On the basis of available and continuing economic studies, he declared, "it is logical to borrow for important needs and to retire the borrowings from user income. By setting aside the income from a fraction—say a cent—of the gasoline tax, there is an assured fund that can be used to retire bonds."

MacDonald elaborated this idea as a means of financing toll roads at low interest rates. He made it clear that he opposes only toll roads financed with revenue bonds. "It is time", he said, "to give serious consideration to a charge for use of what we may call extra facilities, such as controlled-access express highways."

In some places, particularly metropolitan areas, the charge can be made by selling a plate or tag to the highway user, as proposed also for the New York Thruway, MacDonald noted. Only on rural highways, is use of toll gates feasible, he indicated.

• **Danger**—"Financing toll roads with bonds paid for entirely out of revenue can lead us into a dangerous situation," MacDonald said. "Only certain stretches of heavy-traffic roads, like the New Jersey Turnpike, can be self supporting on that basis."

Interest charges can be reduced greatly by financing toll roads with state-backed bonds that can be repaid in part out of earmarked gasoline tax receipts, MacDonald said. "Bonds pledging the faith and credit of the state require a vote of the people," he said. "But just as good financing is available by legislative action setting aside a portion of tax income to pay the difference between bond charges and toll collections."

On increased federal aid Mac-

in WIRE ROPE, too, extra strength demands the RIGHT KIND of muscle

Towering as high as eight feet on his hind legs, the Kodiak or Alaskan Brown Bear ranks as the most powerful animal of North America. Rugged muscle development makes him the feared and deadly fighter that he is.

In wire rope, too, the right kind of muscle is essential to ward off the destructive effects of abrasion, corrosion, bending fatigue, load strain and shock stress.

That's why in Wickwire Rope we make sure—through complete quality control—that you always get the right construction and lay of the rope...the right grade of steel and size of wire for long-lasting resistance to the rigors of your particular service.

See your Wickwire Rope distributor or contact our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
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THE COLORADO FUEL AND IRON CORPORATION

The man who sneezed

d at $104,000.00

By Mr. Friendly

"My philosophy is simple!" Said Jones, the famous treasurer,
"If a dollar saved is pleasure... a fortune saved is *pleasurer!*"
We said, we'd saved one company a *hundred grand or so!**
"A round, firm, fully-packed sum!" he cried,
"A sum to make a man glow."
"It's twice as pleasing as 50 grand, and 10 times as pleasing as 10."
Then he started sneezing to beat the band,
and did it again and again!
The moment he heard his dreadful "Ka-choo!"
he knew as a treasurer he was through;
For any treasurer will tell you *that*,
this is a sum you can't sneeze *at!*

*THE CASE OF THE DODGE CORPORATION

Company: Dodge Manufacturing Corporation of Mishawaka, Ind. "First in power transmission machinery."

Record: An American Mutual policyholder for over 30 years.

Savings through lower premiums: $75,000 in last 8 years alone.

Savings through dividends: More than $29,000.

Total Savings: More than $104,000.

Moral: If you're interested in service that can help reduce costly accidents and premiums . . . and help raise production and employee morale, write for the complete case of the Dodge Corp., American Mutual Liability Insurance Co., Dept. 0-119, 142 Berkeley St., Boston 16, Mass.

AMERICAN MUTUAL A M

Service from salaried representatives in 78 offices! • Savings from regular substantial dividends!

© 1954 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

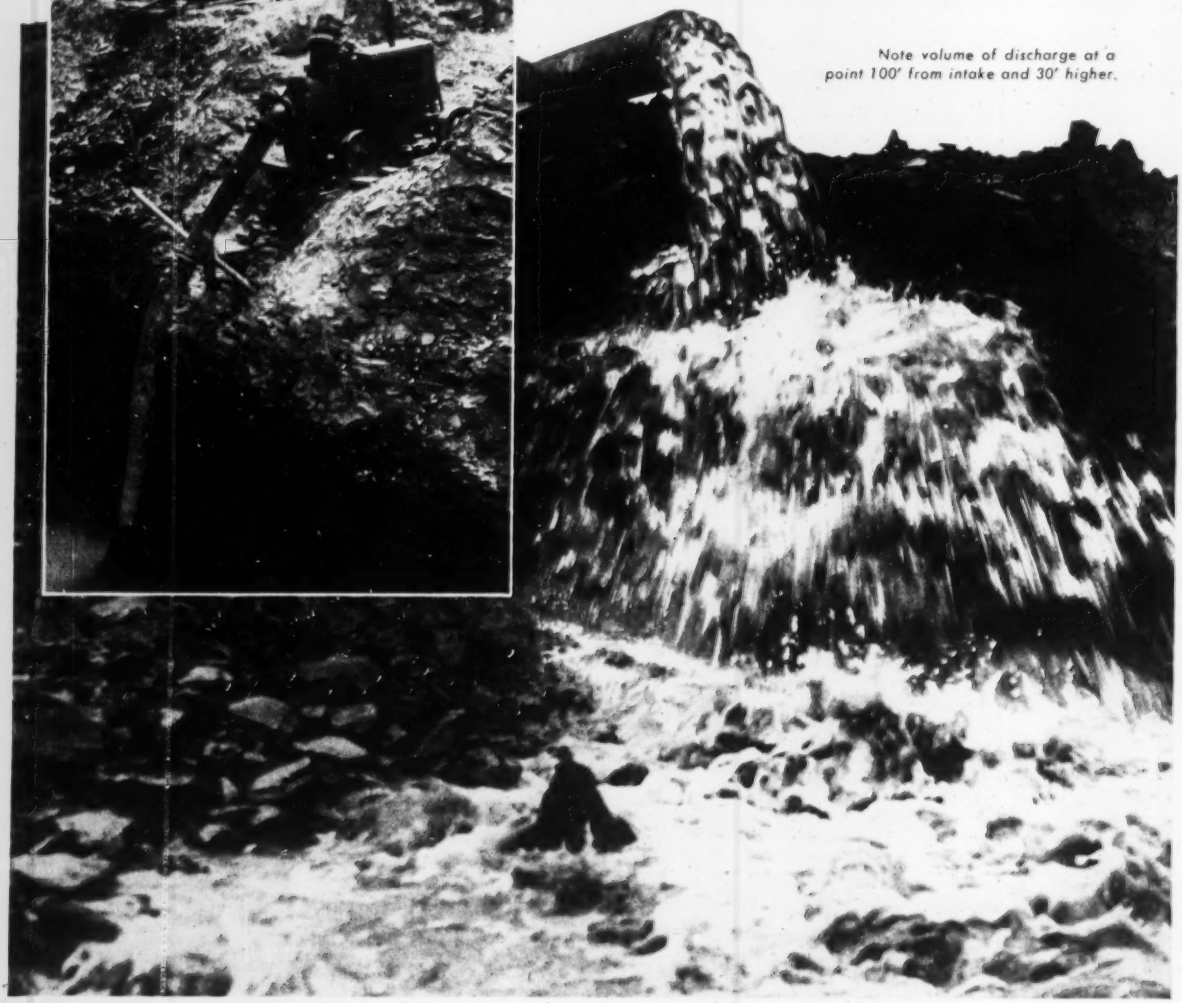
10″ Jaeger lifts creek over 30′ bank

Replacing 3 ordinary 6″ pumps previously operated 24 hours a day, one 10″ Jaeger "Sure Prime" handled the entire impounded flow of this creek in only 14 hours a day.

The job was performed in a 30′ cut in a stream bed being stripped of coal by Ben Construction Co. of Pittsburgh, Pa.

This diesel-powered Jaeger operated for 8 months completely trouble-free, in all kinds of weather, which involved handling storm water as well as normal creek flow.

Note volume of discharge at a point 100′ from intake and 30′ higher.



Jaeger Pumps pull stronger and pump longer because they are built oversize with larger shells and impellers, have two priming actions, and are generously powered with engines of the highest horsepower applicable. Prime without vapor lock, sustain efficiency on non-stop pumping, and give thousands of hours more service from pumps and engines.

Dewatering Pumps to 10″ • Pressure Pumps to 275 lbs.

See your Jaeger distributor or send for Catalog P-10.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • PAVING MACHINERY

Donald believes it "desirable to equate federal aid to federal gas tax revenues." In other words, he favors returning to the states for highway construction as much money as the federal government collects in motor fuel taxes. There are now bills before Congress to increase federal aid on that basis by some $225 million.

• **Record**—MacDonald has been in his present post ever since it was created in 1919, first with the title of Chief of the Bureau of Public Roads, and since 1939 as Commissioner. It may well be that his 34 years in a major policy-making job is a record for federal government service. He reached the mandatory retirement age of 70 more than a year ago, but his tenure was extended by President Truman.

MacDonald was born in Leadville, Colo., in 1881. He was graduated from Iowa State College in 1904 with a B.S. in Civil Engineering. That fall, he became an assistant professor of engineering at Iowa State, and was put in charge of road investigation work. Two years later, he was appointed highway engineer of the first Iowa highway commission, and in 1913 became chief engineer.

Before MacDonald's 15 years with the highway commission were over, Iowa had become the first state in the Middle West to establish a statewide system of main roads. He went from there to administer from Washington the federal-aid Road Act of 1916, which was the beginning of federal-state cooperation in building highways.

Urban rebuilder

Cook heads NAHB's redevelopment drive

G. Yates Cook, well known as the promoter of the "Baltimore Plan" for slum clearance, has joined the National Association of Home Builders as head of a new Department of Urban Redevelopment. Yates, 43, recently resigned as director of the Housing Bureau of the Baltimore Health Department (ENR Feb. 26, p. 53).

In his new role, Cook will head a nationwide campaign by NAHB to rebuild the rundown areas that can be found in nearly every U.S. city. The redevelopment program was decided on at NAHB's annual convention in Chicago last January.

• **Experience**—Cook will go around the country advising local authorities on slum problems, and helping them map out their own plans. He's had plenty of experience. Back in 1941, he joined the Baltimore Health Department as a one-man housing division, assigned to inspect the teeming slum areas in downtown Baltimore, which were then among the worst in the U.S.

Almost single-handedly, Cook stirred Baltimore into action. A special housing court was set up to deal with violations by landlords and tenants. In 1945, Cook started the first block-by-block housing law enforcement program, now called the Baltimore Plan. Since then, more than 16,000 slum houses have been restored, at a cost to the city of only a fraction of a cent per capita.

The plan has caught hold in a number of other cities, notably Charlotte, N. C., and Pasadena, Calif., where similar cleanup campaigns have made headway in fixing up slum areas.

• **Three parts**—The NAHB program which he will direct is made up of three parts:

(1) Slum housing would be rehabilitated at the landlord's expense, through strict enforcement of the health, sanitation, and safety laws which most cities already have. This is the Baltimore Plan.

(2) Old but structurally sound houses taken by builders as "trade-ins" on new houses will be remodeled and modernized. Alan E. Brockbank, of Salt Lake City, the immediate past-president of NAHB, has been pushing the trade-in idea for some time, and it got considerable attention at NAHB's last convention.

The method already is being used by builders in several parts of the country, including: Salt Lake City, Chicago, Minneapolis, San Diego, Fort Worth, Pittsburgh, Columbus, Ohio, and Charleston.

So far, the big stumbling-block to trade-ins is financing for the builders while they are carrying the houses they take in exchange for the new ones they sell. NAHB has recommended that the Federal Housing Administration provide mortgage insurance to help builders.

(3) Large-scale redevelopment would be undertaken in cases where entire areas have decayed to the point where they are economically useless, and are handicapping urban development. In such cases, local authorities would be asked to condemn the blighted areas and assume part of the cost of clearing the land for private redevelopment.

(Continued on page 62)

Alabama Industrial Plant SAVES $5,000

with Koppers Pressure-Creosoted Posts

NOT long ago, an industrial concern decided to erect a 4,600-foot fence around its Alabama plant area. The bid received on a conventional chain link fence with steel posts embedded in concrete was $15,654.14. When they checked with Koppers they found that they could save $5,000 by using Koppers pressure-creosoted posts.

Needless to say, they installed pressure-creosoted posts. No concrete was needed—the posts were set directly in the ground. The link fence, supported by heavy wire was easily attached to the strong, sound wood. They were so pleased with their chain link fence on pressure-creosoted posts that they have installed a similar fence at another plant.

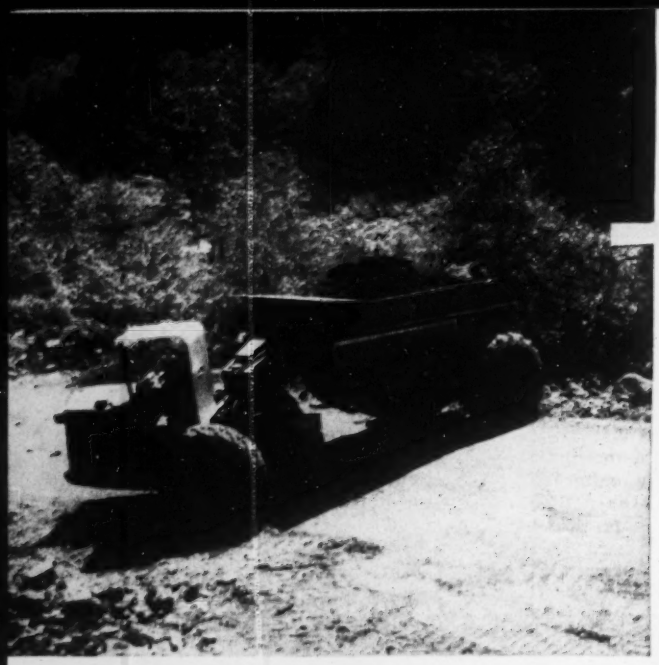
Koppers pressure process forces creosote deep into the wood . . . gives it long-lasting service for years and years. In fact, Koppers posts are known as 30-year posts. They are available in sawn or rounds in almost any size.

For further information, write your nearest Koppers Office.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS

KOPPERS PRESSURE-TREATED WOOD



"D" makes 90° turn to dump. "Rig takes no effort to operate in tight quarters," says John Becker. "Push-buttons make it easy on us operators."

CRAMPED QUARTERS... 1920 pay yds. per 10 hrs.

Herman Kathman of Kathman & Staen Construction Co., Seattle, Washington, rebuilding a timber access road near Estacada, Oregon, hauled 104,000 yds. of rock with two 9-ton, rear-dump D Tournarockers. Loaded by 1½-yd. shovel, each "D" got 8 pay yds. per load. On one-way hauls of 50' to 400' through open traffic, the 2 rigs moved 240 loads (1,920 pay yds.) per 10-hour shift — all the shovel could dig. Even on 1000' hauls, the 2 "D's" kept the shovel humping. "Tournarockers are tops," says Partner Herman Kathman. "Due to narrow operating areas, the success of this job is due to the D Tournarockers." Adds Job Foreman James G. Forrest, "Tournarockers beat any truck I've ever seen . . . are the best rock or dirt-hauling units I have ever used." Units maintained 95% mechanical efficiency.

How 4 West Coast contractors

2½-yard shovel loads Tournarocker with 15 loose yds. in 6 to 8 passes. "C's" big 9½ x 12½' target speeds swings, cuts spillage.

5½% GRADES, TRAFFIC... 200 pay yds. hourly

K. L. Goulter & Company, Dexter, Oregon, worked two 18-ton, rear-dump C Tournarockers through heavy traffic on 757,000-yd. widening of U. S. Highway 10 at Snoqualmie Pass, Washington. With sideboards for extra capacity, Tournarockers were loaded with 10 pay yds. of dirt and rock (60% voids) in average of 2½ minutes. One-way haul of 200' through traffic took 1 minute . . . dump, return up 5½% grades, and spot took 1½ minutes. Total 400' cycle was completed every 5 minutes. That's 10 trips (100 pay yds.) per unit per 50-minute hour. After checking high-speed production similar to this over a 20-hour-day, 6-day-week work schedule, Office Manager Roy C. Johnson reports, "Tournarockers are *very* satisfactory. We just ordered two more."

LETOURNEAU LET EQUIPMENT

FOR 24 YEARS THE LEADER IN RUBBER-TIRED

TRAFFIC DELAYS...
384 pay yds. hourly

J. Tomei & Sons Construction Co., Van Nuys, California, is moving 360,000 yds. of rock, sand and clay on construction of the new Hollywood Freeway... has assigned 84% (300,000 yds.) to 4 C Tournapulls. Excavating and grading for cutoffs and overpasses, and leveling for right-of-way, their 4 "C's" maneuver in tight quarters, negotiate 10 to 24% grades, and drive through heavy traffic. Despite these conditions, each Tournapull heaps 12 pay yds. per load . . . completes a 2000′ to 2600′ cycle every 7 minutes. That's 8 trips (96 pay yds.) per unit per hour, for a combined hourly output of 384 yds. Partner Perry Tomei says that the Tournapulls are doing the job better and quicker than tractors and scrapers could.

With 90° power steer, electric controls, and big air brakes (3763 sq. in. braking surface) "C's" easily made sharp turns, worked steep grades.

licked tough job conditions

Load time for 11½ pay yds. of sandy clay averaged a minute . . . distance, 75′. In loose footing, "C's" averaged 9 m.p.h. on 2000′ haul.

WATER SEEPAGE...
545 pay yds. hourly

Thomas Scalzo Company, Seattle, drove their 5 C Tournapulls 90 miles from Olympia to Poulsbo, Washington, in 4 hours. Here, the 5 "C's" moved 400,000 yds. of clay and gravel to widen the Agate Pass Highway (State Route 21-A). Despite water seepage, which at times slowed load and haul, each Tournapull completed a 4000′ cycle every 5.2 minutes. Loads averaged 11½ pay yds. in sandy clay, for a total unit output of 109 pay yds. per 50-minute hour. On a previous 500,000-yd. highway job along the Deschutes Basin at Olympia, each Tournapull completed a 6600′ cycle every 5.8 minutes. Loads in wet sand averaged 11 pay yds. for a unit hourly output of 8 to 9 trips (88 to 99 pay yds.). "Tournapulls are good rigs for adverse weather," reports Partner Robert J. Scalzo.

Tournapulls, Tournarockers interchange behind same 2-wheel prime-mover. Bottom-dump Tournahopper, Flatbed Tournahauler, Tournacrane also available as profit insurance for any future job application.

Tournahauler — Trademark
Tournapull, Tournarocker, Tournahopper, Tournacrane—Trademark Reg. U. S. Pat. Off. G-246-M

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Peoria, Illinois

WELLMAN *Williams Type*

PERFORATED DRAGLINE BUCKET

speeds the wet jobs

● You get big loads fast with this Wellman Perforated Dragline Bucket because excess water goes out while gravel stays in on jobs such as illustrated.

Built of special alloy steel—all welded for strength plus light weight. You can work faster with less maintenance with Wellman dragline buckets.

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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

Core Drill Contractors for more than 60 years

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Contract Core Drill Division • MICHIGAN CITY INDIANA

MEN AND JOBS

Careers . . .

• **Appointed**—Brig. Gen. Walter K Wilson, Jr., has been made Mediterranean Division Engineer at Casablanca, French Morocco. Wilson will be succeeded as South Atlantic Division Engineer by Col. Charles G. Holle, who has been New Orleans District Engineer since 1949. . . . Col. Charles T. Tench, now Atlantic District Engineer, will take over at New Orleans, to be succeeded by Col. Herbert G. Lux. . . Rear Adm. Carl A. Trexel, CEC USN (Ret.), an engineer for the Ben C. Gerwick Co., San Francisco marine construction firm, has joined Tudor Engineering Co., but will retain his post with Gerwick . . . Ralph Tudor, president of Tudor Engineering Co. leaves this month to start his new job as Under Secretary of the Interior . . . Nebraska's State engineer, Harold Aitkin, has taken a top post with the Civil Defense Administration, under former Governor Val Peterson, who first appointed him to his state job.

• **Elected**—Morgan Strong, executive secretary of New York State's Conference of Mayors and Other Municipal Officials, has been made chairman of the Construction Standards Board of the American Standards Association C. A. Willson, research engineer of the American Iron & Steel Institute, is the new vice-chairman of this board . . . George S. Salter, chief filtration engineer of the Chicago Department of Public Works, elected president of the Chicago Engineering Society.

• **Honored**—Luther T. Fawcett, of Youngstown, chief engineer of the Mahoning Valley Sanitary District, has been cited by the Ohio Society of Professional Engineers for his achievements in the field of engineering. . . . George N. Thompson, assistant chief of the Building Technology Division of the National Bureau of Standards, has received the Department of Commerce Gold Medal for his work in developing model building codes. . . . I. F. Kinnard, engineering manager of General Electric Co.'s Meter and Instrument Department, awarded the Lamme Gold Medal of the American Institute of Electrical Engineers.

• **Retired**—Dr. H. Trendley Dean, who has been responsible for much of the basic research on the effect of fluoridated water to reduce tooth decay, is retiring as director of the National Institute of Dental Research, Public Health Service. He'll be succeeded by Dr. Francis A. Arnold, Jr.

Photo Courtesy Mixermobile Manufacturers, Portland, Oregon

180 horsepowered Scoopmobile loads 4319 yards of wet sand in 31 hours!

No stranger to hard work, this loader. Each time it bends down, a hydraulically operated loading bucket picks up, carries and loads as much as two cubic yards of dirt, rock or sand. Four-wheel planetary gear drive and four-wheel power steering are combined for plenty of power, amazing speed and maneuverability. Five-speed transmission enables top performance under any conditions of terrain.

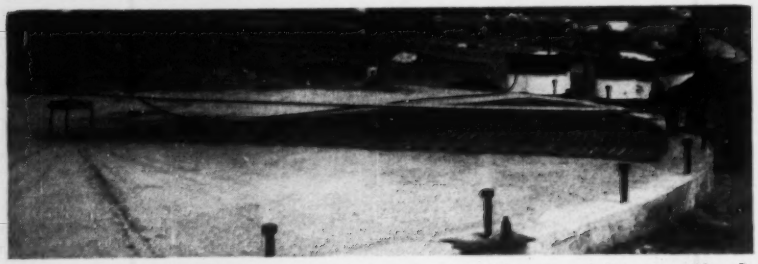
Like others, this manufacturer powers with Chrysler because he *knows* every Chrysler Engine is engineered for long-lived, top-profit performance. He selected the husky Model 20 Chrysler V-8 Industrial Engine. Result: *more* work in *less* time.

Chrysler can equip its 180 horsepower Model 20, or any of its Industrial Engines, to meet special requirements. For example, Chrysler can supply engines with propane or natural-gas burning carburetor, gyrol Fluid Coupling or torque converter.

Chrysler Industrial Power is not expensive. Production-line methods adapted to specialized engine building provide a custom-built engine at mass-production prices. See a Chrysler Industrial Engine Dealer or write: ***Department 741, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER
Industrial Engines

HORSEPOWER WITH A PEDIGREE



SEGMENTAL PENETRATION—Axial spray bar with spray holes at uniformly varying spacing distributes oil evenly to penetrate a segment of tank foundation.

Uniform oil penetration obtained with spray bar

A rotating spray bar was handy for oiling fuel tank foundations at an Eastern naval fuel depot.

Specifications called for full penetration of a 6-in. cushion of sand, placed on compacted or undisturbed earth within a circular concrete foundation ring.

Tests on the available sand showed that a half gallon of oil (it was a light lubricating oil) would saturate a cubic foot of sand. The problem then was to get uniform distribution of the oil at this proper rate. A rotating spray bar was the solution. As illustrated, the 1¼-in. pipe bar was supported at one end on an axle stand; at the other on a wheel that traveled on the ring wall. One-eighth-inch holes were drilled in the pipe at uniformly varying spacing, being close together at the outer end, far apart at the inner end.

The inner end of the spray bar was hose-connected to a 52-gal oil drum, in which 12-psi air pressure was maintained during spraying. This pressure does not spring the barrel-heads. In one penetration procedure the bar was moved slowly back and forth in a segment calculated to take one barrel of oil. In the other procedure a workman walked the spray bar, or header around the 42 ft 6-in dia tank base once every two minutes, dispersing about 3½ gal of oil per minute. Total consumption for a tank base was 338 gal.

Several hours after distribution of oil, random sampling showed complete impregnation of the sand. During periods between sand-penetration and erection of steel tank bottoms, several cushions were subjected to rainfall, but further tests showed no adverse effects.

The following staff members of Malan Const. Corp. developed the method: Edward Feldman, Robert H. Owens, Al Kaspar and Harry H. Smith—S. G. FELDMAN, Malan Const. Corp., Long Island City, N. Y.

Heavy barite concrete slows gamma rays

Engineers at the Nova Scotia Technical College, Halifax, have tested a dense concrete made with a low-grade barite aggregate in a search for a low-cost material with high resistance to gamma-ray penetration. The aggregate contains 80% barite and 10% iron oxide and has a specific gravity of 4.2. A concrete was obtained with a weight of 190 to 200 lb per cu ft.

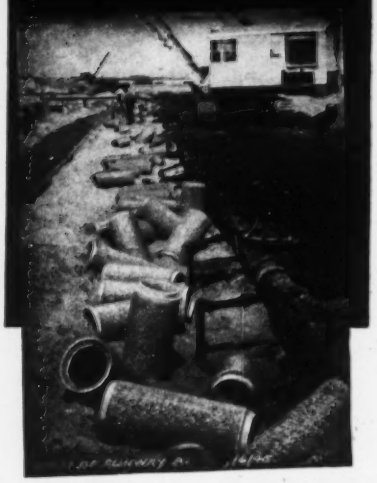
A narrow beam of gamma rays from cobalt-60 was shot at various thicknesses of the barite concrete. The scientists found that a wall 12 in. thick allowed a penetration of 1% of the rays, and a wall 1.5 in. thick allowed a 50% transmission. They also found that gamma-ray penetration is inversely proportional to concrete density. Ordinary concrete, with a weight of 145 to 150 lb per cu ft, let 50% of the gamma rays through a 2-in. wall. A wall of ordinary concrete would have to be about 16 in. thick to keep transmission of gamma rays down to 1%.

In the barite mix, cement-aggregate bond is good, and the water-cement ratio is normal. No difficulties were encountered in the mixing, the scientists report, and since barite is much softer than gravel aggregate (a hardness of 3 compared with 7 for quartz), there should be less wear on standard mixing equipment.

The tests were reported in an article, "Barite-Aggregate Concrete for Gamma-Ray Shielding," by K. A. Shelstad, V. E. Vaughan and E. L. Cameron, in the CANADIAN JOURNAL OF TECHNOLOGY, Dec., 1952, p. 334.

FAST, SURE DRAINING

of Ground Water is Vital to WORLD'S LARGEST AIRPORT



That's Why Idlewild Depends on

WALKER POROSWALL RAPID DRAIN PIPE

Efficient and rapid drainage at Idlewild was a major problem — solved by using WALKER POROSWALL as a permanent installation for sub-surface runway drainage. In the words of Carillo & Green Associates, consulting engineers, POROSWALL "lowered the water table to a level beyond our best expectations."

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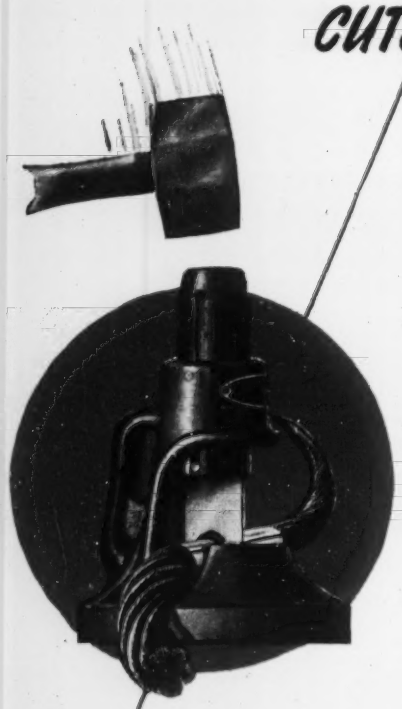

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LEGAL

Architect's compensation when upset price is exceeded

A contract for architectural services for the preparation of plans and specifications of a building and for the supervision of the construction thereof contained a provision fixing the maximum cost of the erection of the building.

The contract for the services provided for payment of the architect's fee on the basis of a percentage thereof at various stages of the preparation of the plans and of the supervision of the building. It also contained a clause providing for the payment of a fee in the event that the owner suspended or abandoned the work.

The owner abandoned the work and the architect then brought an action[1] to recover that part of the fee he claimed that he was entitled to under the contract in case the work were abandoned. The owner interposed the defense that at the time the contract was entered into, there was an oral agreement that the cost of the building was not to exceed a fixed sum and that the work was abandoned because the building as planned by the architect could not be built within the stipulated cost limit and that under these circumstances, the contract provision providing for a payment of a certain percentage of the fee in the event that the work was abandoned had no application.

The court held that parol evidence was admissible to show that the owners had specified a maximum cost for the work and found as a fact that the reason why the owners abandoned the work was because it could not be erected within the fixed upset price. It was held that since the work had been abandoned because the architect had failed to perform his part of the contract the architect was not entitled to recover. The provision of the contract providing for payment of part of the fee in the event the work was abandoned applied only when it was done without any fault on the part of the contractor.

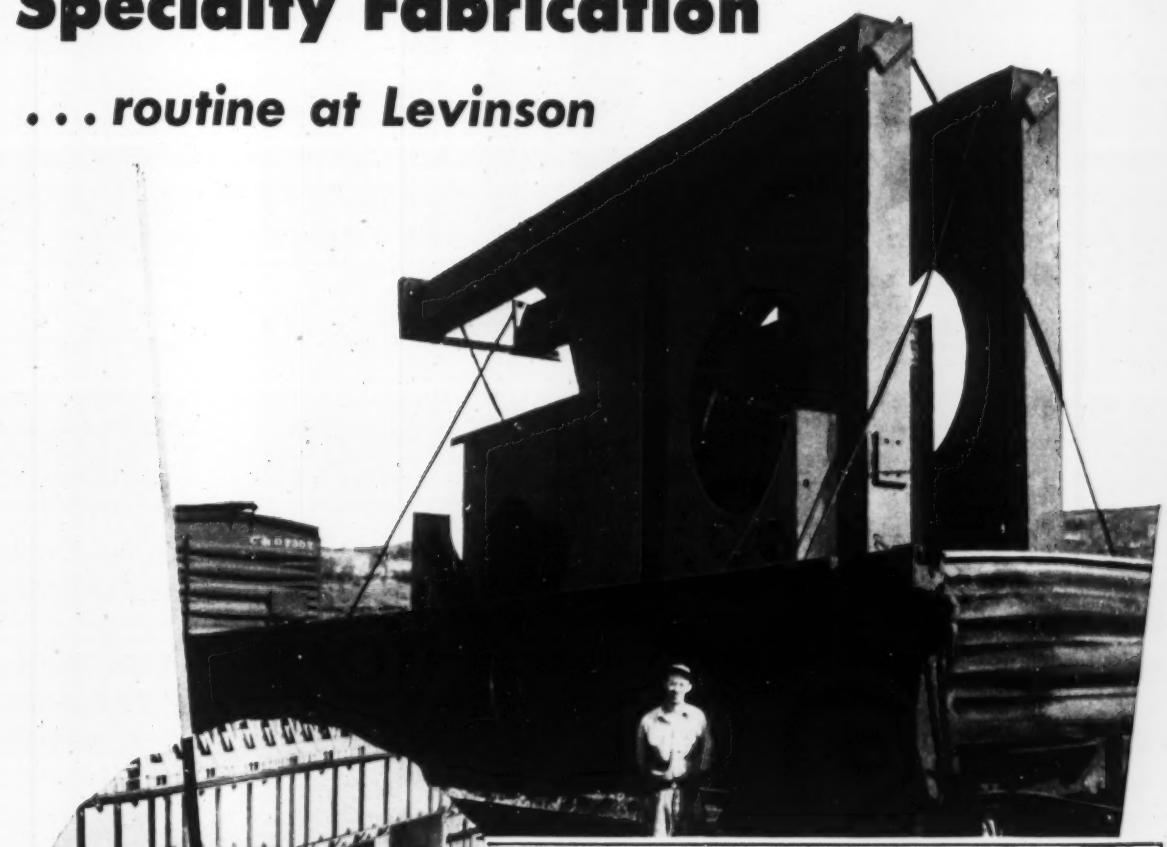
(1) Wick et al. v Murphy et al., 54 N.W. 2d 805, Supreme Court of Minnesota, August 15, 1952.

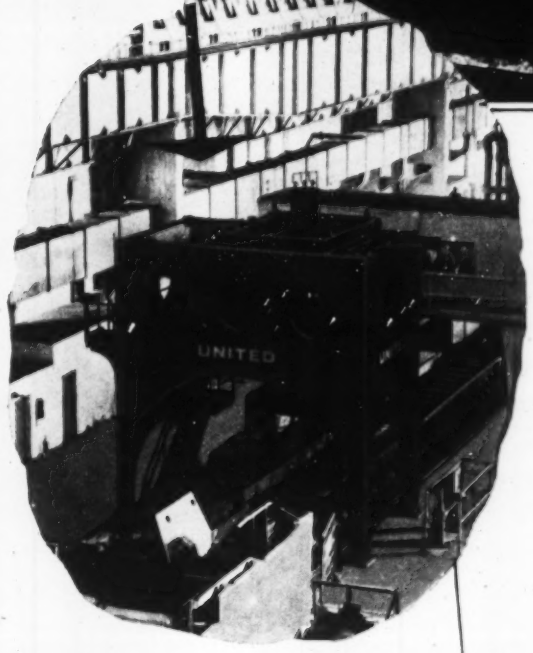
Acceptance of an offer as constituting a contract

"It is well settled that a proposal to accept, or an acceptance upon terms varying from those offered, is a rejection of the offer, puts an end to the negotiation, unless the party who

Specialty Fabrication

. . . routine at Levinson





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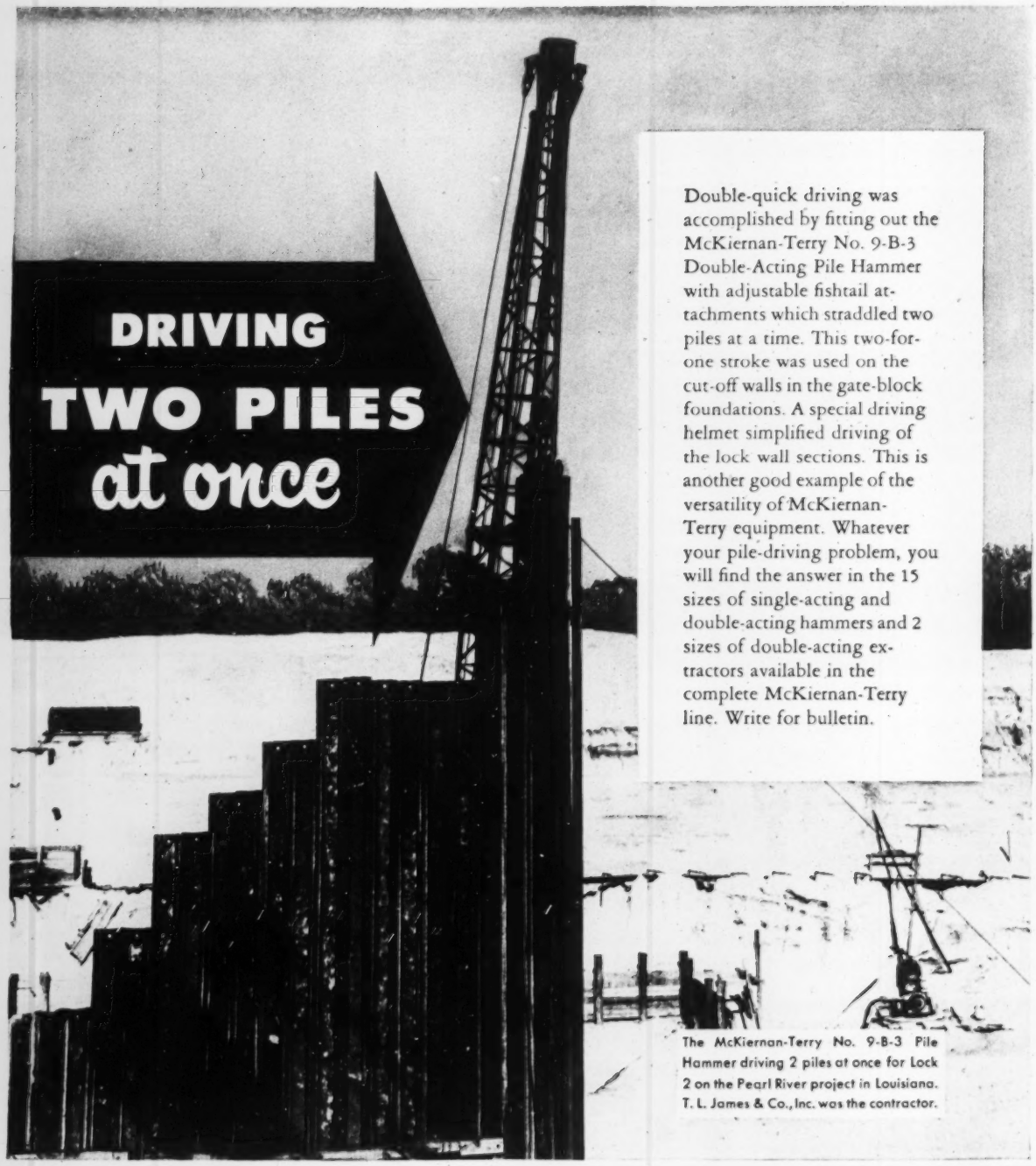
Double-quick driving was accomplished by fitting out the McKiernan-Terry No. 9-B-3 Double-Acting Pile Hammer with adjustable fishtail attachments which straddled two piles at a time. This two-for-one stroke was used on the cut-off walls in the gate-block foundations. A special driving helmet simplified driving of the lock wall sections. This is another good example of the versatility of McKiernan-Terry equipment. Whatever your pile-driving problem, you will find the answer in the 15 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors available in the complete McKiernan-Terry line. Write for bulletin.



The McKiernan-Terry No. 9-B-3 Pile Hammer driving 2 piles at once for Lock 2 on the Pearl River project in Louisiana. T. L. James & Co., Inc. was the contractor.

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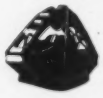

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MK288A

made the original offer renews it or assents to the modification suggested."[1]

In a second case,[2] a contractor submitted an offer to perform part of the work for which another contractor was submitting a bid as the general contractor. After the general contract had been entered into, the general contractor submitted to the proposed subcontractor a written form of contract and requested the subcontractor to sign it and return one copy to the general contractor.

The proposed written agreement called for the performance of some additional work not called for at the time the bid was submitted, and it did not provide for compensation for this additional work. It also contained provisions to the effect that the subcontractor would pay $50 per day as liquidated damages for delayed performance and that he would make no claim for damages resulting from acts of the general contractor or other subcontractors employed by him.

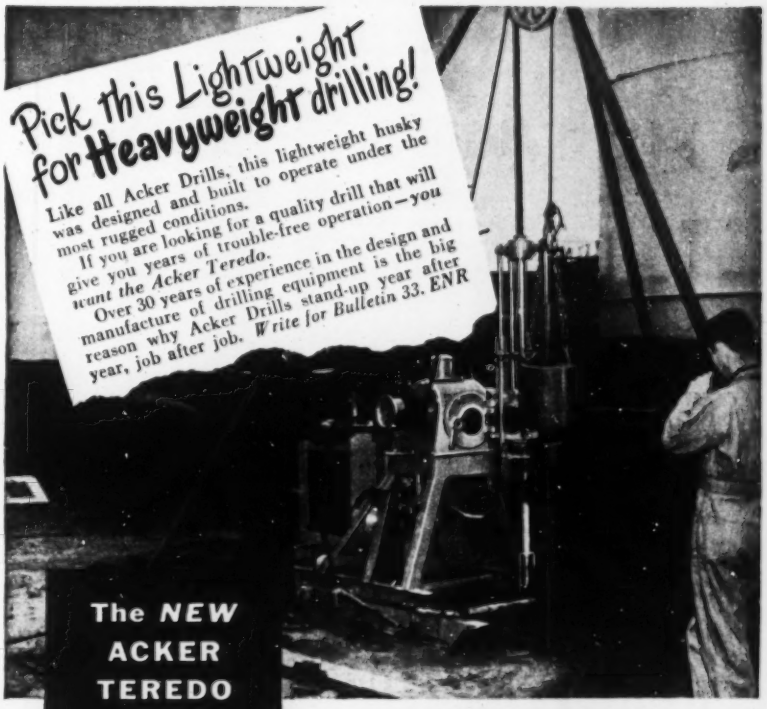
The subcontractor refused to execute the proposed agreement and notified the general contractor that it was no longer interested in the job. The general contractor then entered into a contract with another contractor for the performance of that part of the work. The contract with the other contractor called for a higher price than that of the subcontractor's bid and the general contractor then brought the action to recover damages resulting from the breach of the alleged contract.

The general contractor was denied a recovery. The court held that the proposed written contract was not an unconditional acceptance of the subcontractor's offer, but constituted a rejection of the offer and a counter-offer. "To create a binding contract the acceptance must unconditionally agree to all the material provisions of the offer, and must not add any new material conditions, but all the provisions of an offer need not be expressly stated therein—some may be implied from the surrounding circumstances."

The court held that the proposed written contract contained material changes from the offer so that it was in effect a rejection of the offer and a counter-offer. The general contractor having rejected the bid, the subcontractor had the right to withdraw the same.

(1) Inglin v United States, 271 U.S. 136, 46 S. Ct. 458, 70 L. Ed. 872.
(2) R. J. Daum Const. Co. v. Child et al., 247 P. 2d 817 (Supreme Court of Utah, 1952).

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)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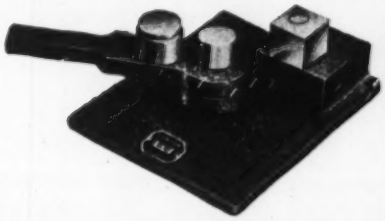

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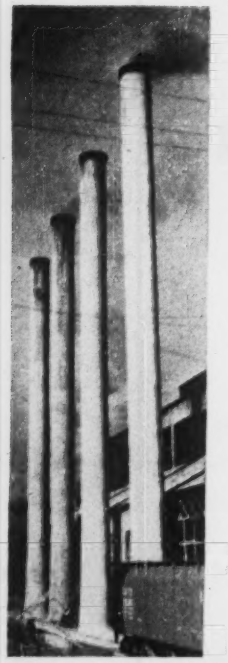

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In building the four stacks shown at the left, the old deteriorated steel stacks were used as forms. They were not taken out of service during construction. Plywood forms are used for new construction and for extending the height of existing stacks.

The cost of building or rebuilding stacks with "GUNITE" is surprisingly low. The seamless, nonporous, monolithic nature of "GUNITE" stacks gives them a life expectancy considerably greater than stacks of steel or reinforced concrete. Many "GUNITE" stacks, in service for more than 20 years, are still in good shape, without maintenance of any type.

Details of stack construction and many other advantageous applications of "GUNITE" are pictured and described in Bulletin A 2400. A request on your letterhead will bring you a free copy.

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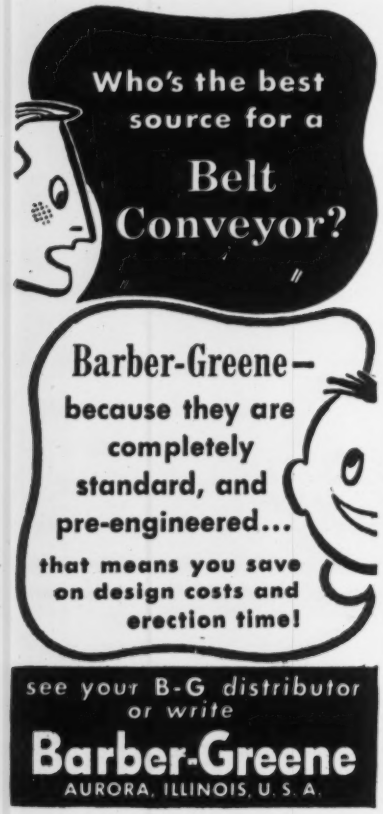
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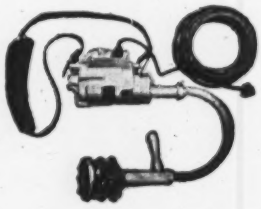

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OBITUARIES

Harry F. Bascom, 79, who for a number of years served as city engineer of Allentown, Pa., died March 4. He stamped his personality upon the development of his community during some of its most important years. He was an 1896 civil engineering graduate of Rensselaer Polytechnic Institute. His first work was for the Chicago and Northwestern Railroad in Minnesota. He went to Allentown 53 years ago. He was the senior member of the firm of H. F. and W. B. Bascom, formerly known as Bascom and Sieger. He was city engineer from 1903 to 1906 and again from 1918 to 1924. He completed the Schantz Spring water system and in 1905 the street flushing system which gave Allentown the name of "the clean city." He was in charge of construction of cement mills at Nazareth and Stockertown, Pa., and Norfolk, Va. His firm developed many real estate subdivisions. He was always in favor of strong legislation which was written to protect the engineer in private practice.

Frank Poduska, Sr., 63, chief engineer of the Mutual Construction Corp., died March 21 in N. Y. City. A Cooper Union graduate of 1915, he became one of New York's leading estimators in building construction, and had been associated with the construction of many buildings in that city and elsewhere.

James B. Bond, 92, construction engineer and former Pittsburgh bridge inspector, died March 15. He went to Pittsburgh in 1896 and was active in the heavy construction field until 1933, when he retired. He was city bridge inspector from 1930 until 1933. He supervised many construction projects, including the Newport News, Va., Navy Coaling Station during World War I. He was with the McClintic and Marshall Construction Co., the Pennsylvania Construction Co. and Rae Construction Co. He also was vice-president of the F. J. McCain Construction Co. Mr. Bond had also served as superintendent of the Eastern Division when he was connected with the American Bridge Co.

Thomas A. Bedford, 83, pioneer member of the engineering staff of the California division of highways, died in Redding, Calif., March 14. When he retired in 1939, he was assistant state highway engineer in charge of surveys and plans, and had been with the highway division since 1908.

Douglas Cornell, 84, who retired in 1939 after 40 years as structural engineer of the Buffalo, N. Y., Division of Buildings, died March 12. He was a graduate of Rensselaer Polytechnic Institute in 1892. After making surveys for railroads, Mr. Cornell entered the New York State Highway Department and was put in charge of improvement of the Amsterdam Section of the Erie Canal. He later worked on another canal section as an assistant engineer in State Department of Engineering.

William I. Blaum, 64, a retired engineer for the New York State Department of Public Works, died March 10 in Orlando, Fla. Most of his career was in laboratory work, testing, examining and inspecting materials used by the Public Works Department. He was a graduate of New York University.

Albert N. Kemp, 56, superintendent of the Frid Construction Company, Ltd., Hamilton, Ont., died March 11. He was responsible for much of the industrial expansion work in the Hamilton area. He had been associated with Frid since 1934.

William A. Lynn, 62, Pick-Sloan Plan construction engineer, died at Lincoln, Neb., March 12. He was president of Lynn Construction Co. which had completed projects on the Missouri, Mississippi and Arkansas rivers. He was also vice-president of Central States Bridge Co.

Rudolf Nagel, chief engineer of the heavy materials handling division of Heyl & Patterson, Inc., died in Pittsburgh recently. He had been chief engineer of Heyl & Patterson for the last eight years and an employee of the company since 1916. He was known as an authority in his field and was active in the development of many advancements and improvements.

Wilbur E. Holl, 67, Canton, Ohio, civil engineer, who succeeded his father as head of the John H. Holl civil engineering firm there, died Feb. 8. He was a graduate of Purdue University. His brother, Alfred, is Stark County's sanitary engineer.

William Wallace Southard, 68, Indianapolis civil engineer and former Marion County surveyor, died Jan. 30. He was with the Indiana State Highway Department and was Indianapolis sanitary engineer, later joining Russell B. Moore, Consulting Engineers, Indianapolis. He retired in 1946.

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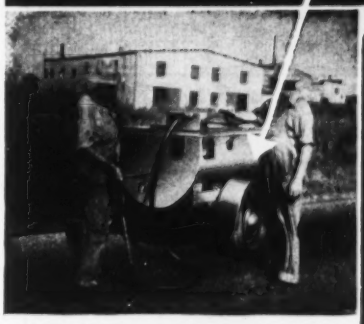

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NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Holyoke—HOSPITAL—B.A. 4/10—City, Bd. P. Wks., City Hall, hospital Proj. Mass 46 (C). $500,000. Plans deposit $50. Fred H. Franz, 70 Nonotuck St., Holyoke, archt. CD 3/4, under LB.

▲ **Conn., New London**—HOUSING—B.A. 4/21—City New London Housing Auth., M. S. Baratz, chn., 97 Laurel Dr., MR 48 moderate rental housing. $2,900,000. Plans deposit $50. Thomas Worcester, Inc., 85 State St., Boston, Mass., archt. D. K. Perry, 17 Court St., New Britain, and F. S. Langdon, 325 State St., New London, consult. archts. and engrs. CD 2/10, under LB.

Mass., Malden—SCHOOL—B.A. 4/27—City, C. W. Holmes, supt. Schools, Senior High School, Malden, elementary school, Linden Area. $900,000. Plans deposit $50, refundable. Edmund I. Leeds & Assoc., Inc., 153 Brighton Ave., Allston, archt. CD 8/5/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **RHODE ISLAND**—State and Providence Plantations, Purch. Agent, 123 State House, Providence.

Whaling City Dredge & Deck Corp., Buell St., Groton, Conn. LB. **$1,482,365**, est. $1,500,000. bridge north of present bridge, Tiverton, Newport Co. Bids Mar. 18. CD 2/17.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford.

The Osborne Barnes Co., Inc., 20 West St., Danbury, Conn. LB. **$421,461**, c. conc. Shelton-Derby Ansonia Expressway and Mill St. etc., U-136 (17) and U-146 (2), Derby and Ansonia;

The Mariani Constr. Co., Inc., 222 Forbes Ave., New Haven, Conn., LB. **$258,375**, bit. macad. Howe Ave. Route 110, S-104 (2), Shelton;

M. A. Gammino Constr. Co., Inc., 728 Valley St., Providence, R. I., LB. **$656,692**, hy. and bridge Eastbound Roadway Wilbur Cross Hy. and Bridge over hy., FI 130 (25) Union. Bids Mar. 16. CD 3/4.

BUILDINGS

LOW BIDS AND CONTRACTS

J. F. Rand & Son, 57 Sudbury St., Boston, Mass. LB **$808,593**, est. $800,000. Michael Driscoll SCHOOL addn., alterations, 64 Westbourne Terrace, BROOKLINE, MASS. Town, Supt. Schools, R. B. Tyler, chn. Bldg. Comn., Town Hall, Brookline, Mass. Bids Mar. 17. CD 2/20.

Furnace Brook Realty Trust, 983 Adams St., Quincy, Mass. Owner Builds. **$550,000.** 44 RESIDENCES, off Adams St., QUINCY, MASS. CD 3/18.

Whitten Bros., 24 White St., P.O. Box 201, Winchester, Mass. Owner Builds. **$770,000.** 69 RESIDENCES, Old Lyndon Farm, 208 Cambridge Rd., WOBURN, MASS. CD 3/17.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Pennsylvania**—B.A. 4/15—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md., flood protection Proj. Unit 4A, at Williamsport, CIVENG 18-020-53-58. Plans deposit $10. CD 3/18.

BIDS ASKED—BUILDINGS

Pa., Phila—HOSPITAL—B.A. 4/7—Shriners Hospital for Crippled Children, Roosevelt Blvd. and Pennypacker Circle, hospital addn. $500,000. The Ballinger Co., 121 N. Broad St., archt. CD 1/22.

N. Y., New York—HEALTH CENTER—B.A. 4/14—Dpt. P. Wks., Municipal Bldg., Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting fixtures for construction of Morrisania Health Center, Fulton Ave. between E. 169 and E. 170 Sts., Bronx Boro. Plans deposit $50. CD 9/19/51.

SOON LETS CONTRACT—BUILDINGS

Pa., Lancaster—MANUFACTURING—Armstrong Cork Co., Liberty and Mary Sts., soon lets contract mfg. bldg. $500,000. Charles S. Conrad, Jr., 47 N. Lime St., archt. CD 2/23/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Atlantic, Gulf & Pacific Co.**, 15 Park Row, New York, 38, N. Y., LB, **$1,880,951**, Route 119G, (Rockaway Route), Jamaica Bay Crossing, embankments from North Channel to Beach Channel, Queens Boro, ROCKAWAY, N. Y., Bd. Transportation, 370 Jay St., Brooklyn 1, N. Y. Bids Mar. 12. CD 2/12.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore.

McLean Contg. Co., 1301 Fidelity Bldg., Baltimore, Md. CA, **$811,473.** steel girder bridge eight 90 ft. spans to carry Annapolis By-Pass over Weems Creek, Contr. AA 263-20-315, Anne Arundel Co. CD 2/3.

▲† **Brown—Coble & Hartford**, Lexington, N. C. LB, **$2,384,885**, est. $2,500,000. airfield imprvs., extens., Phillips Field, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Mar. 17. CD 2/18.

▲ **Jos. F. Hughes & Co.**, 517 N. Charles St., Baltimore, Md. LB, **$2,692,000**, est. $2,400,000. Phase No. 4, rein.-con., brick, steel Baltimore Memorial Stadium, BALTIMORE, MD. City; Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Mar. 18. CD 3/9.

Pittsburgh-Des Moines Steel Co., Neville Island, P. O. Pittsburgh, Pa. CA **$694,600.** Incinerator No. 4, Pulaski Hy. Plant, 4 furnaces, flue, stokers, oil burners, BALTIMORE, MD. City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Md. CD 3/17, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Buhl Constr. Co., Inc.**, 45 W. 45 St., New York 19, N. Y. CA. **$1,843,800**, general constr., A and B;

Gasman Plumbing & Heating Corp., 327 Hicks St., Brooklyn 2, N. Y., CA **$466,515**, heating and ventilating, A and B, for alterations to ADMINISTRATION and OUT-PATIENT DEPARTMENT BLDG. at Bellevue Hospital, Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., Zone 7, N. Y. Bids Jan. 21. CD 12/31.

▲ **Wilaka Constr. Co.**, 11 E. 44 St., New York 17, N. Y. LB **$6,464,000**, general constr.;

Afgo Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y. LB **$663,000**, heating;

Novak & Co., 19 Waverly Pl., New York 3, N. Y., LB **$492,300**, plumbing;

Heckler Electric Co., 44 Schenectady Ave., Brooklyn 13, N. Y., LB **$434,900**, electrical work for 2 disturbed PATIENTS bldgs., Creedmoor State Hospital, QUEENS VILLAGE, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 19. CD 3/12.

Green Constr. Co., 274 Madison Ave., New York 16, N. Y. CA. **$605,810**, 75 unit HOUSING, Proj. NY-20-1, Jefferson St., SARATOGA SPRINGS, N. Y. Saratoga Springs Housing Auth., City Hall, Saratoga Springs, N. Y. Bids Dec. 19, awarded Mar. 12. CD 12/11.

▲ **Boardman-Smith Corp.**, 1322 W. Airdrie St., Phila., Pa., Separate Contracts, **$1,000,000**, APARTMENT DEVELOPMENT Massachusetts, Oriental and Corinthian Aves. and Boardwalk, ATLANTIC CITY, N. J. G. Harold Murphy & Assocs., 1621 Sellers St., Phila., Pa., archts.

▲ **Merion Park Development Corp.**, 2409 N. Broad St., Phila., Pa., Separate Contracts, **$6,000,000** RESIDENTIAL DEVELOPMENT, Bay Ave. and 34 St., OCEAN CITY, N. J. Lewis J. Cowan, 1505 Pine St., Phila., Pa., archt.

▲ **Ledger Constr. Co.**, 1609 Western Saving Fund Bldg., Phila., Pa., CA, **$2,000,000**, private HOUSING DEVELOPMENT, PEMBERTON, N. J. Sunbury Village, Inc., 1609 Western Saving Fund Bldg., Phila., Pa. Dante J. D'Anastasio, 1815 Federal St., Phila., Pa., archt.

▲ **Hamilton Square Park**, 9 Prospect Park, West Brooklyn, N. Y., Separate Contracts, **$5,000,000** SHOPPING CENTER and RESIDENTIAL DEVELOPMENT, Route 33 between Hamilton Square and Yardville Rd., TRENTON, N. J.

L-D Building Co., P.O. Box 472, Latrobe, Pa., LB **$488,000**, general contract, reconstructing Leonard Hall DORMITORY at Indiana State Teachers College, INDIANA, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Mar. 18. CD 2/18.

Richard Kelly, 217 Magnolia Terrace, Kirklyn, Pa. Separate Contracts. **$595,000.** RESIDENTIAL DEVELOPMENT, S. Union Ave., KENNETT SQUARE, PA.

▲ **Gallagher & Co., Inc.**, Joseph Gallagher, 400 Shadeland St., Drexel Hill, Pa., Separate Contracts. **$1,500,000.** RESIDENTIAL DEVELOPMENT, LANSDALE, PA.

Doylestown Building Co., 130 S. Main St., Doylestown, Pa., Separate Contracts. **$830,000.** RESIDENTIAL DEVELOPMENT, NEW BRITAIN, PA.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa., CA, Est. **$1,000,000**, diesel LOCOMOTIVE SHOP, PITCAIRN, PA. Pennsylvania R.R., D. L. Sommerville, ch. engr., Penna. Station, Pittsburgh, Pa. Bids Aug. 25. CD 8/11/52.

Edward J. Walsh, Inc., 111 Fairfield Ave., Upper Darby, Pa., Separate Contracts. **$800,000.** RESIDENTIAL DEVELOPMENT, Avondale and Terrace Lane, WALLINGFORD, PA.

The Trimble Co., 1719 Penna Av., Pittsburgh, Pa., CA **$850,000**, Central OFFICE, Skyline Dr., WEST MIFFLIN, PA. Bell Telephone Co., 416 7 Ave., Pittsburgh, Pa. P. C. Dowlee, Century Bldg., Pittsburgh, Pa., archt.

▲ **Consolidated Engineering Co., Inc.**, 20 E. Franklin St., Baltimore, Md. CA **$1,000,000**. 2 and 3 story, brick, rein.-con., L-shaped central OFFICE, 5711 York Rd., BALTIMORE, MD. Chesapeake & Potomac Telephone Co., 320 St. Paul St., Baltimore, Md. Frank N. Kneas, 504 Woodlawn Terrace, Phila., Pa., struct. engr. Moody & Hutchison, 1420 Walnut St., Phila., Pa., mech. engrs. CD 11/5/52.

Palladi Constr. Co., 5000 Briarcliff Rd., Baltimore, Md. Owner Builds. **$300,000.** forty-four 2 story, masonry HOMES, 700 block Stamford Rd., 5000 blocks Briarcliff and Old Frederick Rds., BALTIMORE, MD. CD 12/10.

▲ **Alvin Aubinoe, Inc.**, Alvin Aubinoe, archt., 1515 19 St. N.W., Wash., D. C. Own Forces. **$1,500,000.** (first unit). APARTMENT, Wisconsin Ave. and Parkhill Dr., BETHESDA, MD.

Henry A. Knott, Inc., 2406 Greenmount Ave., Baltimore, Md. CA **$663,776.** 2 story, brick, concrete block, concrete SCHOOL and CONVENT, GLEN BURNIE, MD. Holy Trinity R. C. Church, Glen Burnie, Md. CD 3/11, under LB.

▲ **The Memorial Hospital**, 1501 Van Buren St., Wilmington, Del., rejected bids Mar. 3 for superstructure for HOSPITAL addns., alterations, WILMINGTON, DEL. CD 2/19.

▲ **Drucker Fuller & Drucker**, 285 Central Ave., Lawrence, N. Y., Separate Contracts. **$4,000,000** Garden APARTMENT DEVELOPMENT, WILMINGTON, DEL.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Miss., Rosedale—B.A. 4/8—City, sanitary sewer imprvs. $65,000. Plans deposit $15, W. M. Thomas, Cleveland, engr.

Miss., Water Valley—B.A. 4/8—Bd. Supervs. Yalobusha Co., Water Valley, grading, paving, bridges 5.072 mi. county road between Miss. Hy. 330 and Miss. Hy. 32, $100,000. Plans deposit $10.

Ky., Elizabethtown—B.A. 4/14—City, WW imprvs. $200,000.

BIDS ASKED—BUILDINGS

▲ **Va., Arlington** — SCHOOL — B.A. 4/9 — Arlington County School Bd., 1426 N. Quincy St., second sect., 2 story, rein.-con., masonry Wakefield Junior High School. $1,500,000. Rhees E. Burket, 1223 Conn. Ave. N. W., Wash., D.C., archt. Beall & LeMay, 1726 M. St. N. W., Wash., D. C., engrs. CD 8/8/52.

Ala., Tuscaloosa—MUSIC, etc.—B.A. 4/14—University of Alabama, Tuscaloosa, music and speech bldg. $500,000. Van Keuren, Davis & Co., 3004 7 Ave. S., Birmingham, archts. CD 8/21.

▲ **Va., Richmond**—SCHOOL—B.A. 4/16—Henrico County School Bd., County Court House, 22 and Main Sts., brick, concrete, masonry Tuckahoe High School. $1,000,000. Dixon & Norman, 1103 E. Main St., archts. CD 12/24/52.

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▲ **Ala., Tuscaloosa**—SCHOOL—B.A. 5/5—City, City Hall White High School, $1,500,000. Plans deposit $75. Extended date. Raymond Sizemore, 28 S. Hull St., Montgomery, archt. CD 1/26.

▲ **La. Gretna**—SCHOOLS—B.A. 5/14—Jefferson Parish School Bd., 519 Huey P. Long Ave., East Side High School, $1,500,000; West Side High School, $1,500,000, Wm. R. Burk, 632 Pirates Alley, New Orleans, archt. CD 1/13.

▲ **Ala., Tuscaloosa**—SCHOOL—B.A. 5/26—City, City Hall, Negro Industrial High School. $1,500,000. Plans deposit $75. Extended date. Raymond Sizemore, 28 S. Hull St., Montgomery, archt. CD 1/26.

SOON LETS CONTRACT—BUILDINGS

Ala., Montevallo—PLANT—Westinghouse Electric Corp., P.O. Box 2278, Pittsburgh, Pa., soon lets contract electrode mfg. plant. (Correction—location of project). CD 2/17, under Ala. Calera.

Ga., Bowdon—MILL—Breman-Bowden Investment Co., Bremen, soon lets contract mill addn. $100,000. David S. Cutting Jr. & Assocs., Mortgage Guarantee Bldg., Atlanta, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Diamond Constr. Co.**, P.O. Box 1007, Norfolk, Va., LB $2,756,747. Desert Cove Piers, Ramps and Quays, rein.-con. piers, piling, etc. Naval Amphibious Base, NOY 75738, Spec. 36503, LITTLE CREEK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Mar. 17. CD 2/26.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 1,
Maxon Constr. Co., 131 N. Ludlow St., Dayton, O., CA, $560,430, 11 piers and 2 abutments for Kanawha River Bridge over Kanawha River near mouth of Campbell Creek at Reed, just east of Charleston, Contract No. 13, Kanawha Co. Bids Feb. 24. CD 2/27, under LB.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 1,
Ralph E. Mills Co., 410 Ann St., Frankfort Ky. and **Morrison-Knudsen, Inc.**, 319 Broadway, Boise, Idaho, CA, $6,182,348, Contract No. 27 grading, draining 9 mi. hy., substructures for 8 bridges relocation 2.4 mi. State Hy. between Miami and Chesapeake Kanawha Co.;
Central Pennsylvania Quarry & Stripping Co., Hazelton, Pa. CA, $2,309,767, Contract 23 A, grading, draining 6.7 mi. between turnpike overpass at Secondary Rt. 40 to Piney Creek, Raleigh Co.;
W. E. Graham & Sons, Cleveland, N. C., CA, $1,117,895, Contract 19, grading, draining 4.8 mi. north of Princeton and for distance of 4.2 mi. Mercer Co. Grand total $9,610,010. CD 2/27, under LB.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 1, rejected bids Feb. 24, Contract 23B, grading, draining 4.3 mi. hy. between Piney Creek and Little Whitestick Creek, Raleigh Co. LB $1,883,819. CD 2/27, under LB.

▲ **Thompson & Street Co.**, Pineville Rd., Charlotte, N. C. LB $2,538,619, auditorium-coliseum, CHARLOTTE, N. C. City, City Hall, Charlotte, N. C. Bids Mar. 13. CD 2/12.

A. C. Samford, Inc., Albany, Ga., LB. $162,941. 2 swimming pools and bath houses—ALBANY, GA. City, City Hall, Albany, Ga. Bids Mar. 12. CD 2/25.

† **U. S. Eng.**, 200 E. St. Julian St., Savannah, Ga., rejected bids Feb. 26, motor pool and facilities, Eng-09-133-53-46, CAMP STEWART, GA. LB. $169,525. CD 3/6.

▲ **Joe Reinertson**, 2047 N.W. 7 Ave., Miami, Fla., LB. $1,205,264, Section A;
Powell Bros., Inc., 14 S.W. 1 Ave., Ft. Lauderdale, Fla., LB. $1,042,447, Section B, sanitary sewerage imprvs., KEY WEST, FLA. City, City Hall, Key West, Fla. Bids Mar. 6. CD 2/5.

ALABAMA—State Hy. Dpt., Montgomery,
A. L. Crow Constr. Co., Selma, Ala., CA. $115,580, bit. 6.577 mi. Old Marion-Tuscaloosa Road, FAS 220 (2), Perry Co. Bids Feb. 27. CD 3/11, under LB.
M. R. Thomason, P.O. Box 1847, Montgomery, Ala., LB. $183,430, 2 water supply tunnels, TUSCALOOSA, ALA. City, City Hall, Tuscaloosa, Ala. Bids Mar. 17. CD 2/26.
R. P. Farnsworth & Co., 1515 S. Salcedo St., New Orleans, La. CA. $516,964. City Park Avenue Underpass, NEW ORLEANS, LA. City, City Hall, New Orleans, La. CD 3/12, under LB.
Burnett & Lambert, P.O. Box 386, Denham Springs, La. LB. $122,464. natural gas distr. sys., PORT ALLEN, LA. West Baton Rouge Parish Police Jury, Port Allen, La. Bids Mar. 11. CD 2/26.
Perrilliat-Rickey Constr. Co., P.O. Box 7027, New Orleans, La. LB. $302,500. 4 swimming pools, SULPHUR, LA. Calcasieu Parish Community Center & Playground Dist., Sulphur, La. Bids Mar. 16. CD 2/24.
Irby Constr. Co., 815 S. State St., Jackson, Miss., LB. $335,326. rural distr. lines, Montgomery Co., TENNESSEE. Cumberland Electric Membership Co-operative, Clarksville, Tenn. Bids Mar. 10. CD 2/26.
DeKalb Telephone Co-operative, Alexandria, Tenn. Owner Builds. $150,000. addnl. telephone lines, ALEXANDRIA, TENN.
† **Charles Hobson Co.**, Church St., Knoxville, Tenn. LB. $486,320. ground installations part of tower shielding facility, Inv. 401-53-SA, OAK RIDGE, TENN. U. S. Atomic Energy Comn., P.O. Box E, Attention: R. J. Dunbar, Oak Ridge Construction Area, Oak Ridge, Tenn. Bids Mar. 16. CD 2/18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. & R. Constr. Corp.**, 821 9 St. N.W., Wash., D. C. Owner Builds. $7,000,000 625 HOME COMMUNITY PROJECTS, incl roadways, Warwick Village, ALEXANDRIA, VA. E. W. Syme, Washington Bldg., Wash., D. C., archt.

▲† **J. A. Jones Constr. Co.**, P.O. Box 966, Charlotte, N. C. CA $12,908,825, forty-five 225-enlisted mens BARRACKS and supporting activities, ENG-31-075-53-9, FORT BRAGGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Feb. 17. CD 2/25, under LB.

Mion Constr. Co., 377 Techwood Dr., Atlanta, Ga., CA Est. $800,000. retail STORE, CHARLESTON, S. C. Sears Roebuck & Co., 675 Ponce de Leon Ave., Atlanta, Ga. Bids Feb. 10. CD 1/22.

▲ **Henry C. Beck Co.**, First National Bank Bldg., Atlanta, Ga. CA, $8,000,000-$10,000,000, OFFICE, ATLANTA, GA. Fulton National Bank, Fulton National Bank Bldg., Atlanta, Ga.

Mion Constr. Co., 377 Techwood Dr., Atlanta, Ga., LB, $491,300, Harris Hall DORMITORY addn., ATLANTA, GA. Emory University, N. Decatur Rd., Atlanta, Ga. Bids Mar. 17. CD 3/6.

▲ **Georgian Village Corp.**, 1798 Moores Mill Rd., N. W., Atlanta, Ga., CA, $1,500,000, 82 RESIDENCES ATLANTA, GA. Etheridge & Vanneman, 4411 Peachtree Rd. N. E., Atlanta, Ga.

▲ **Geo. A. Fuller Co.**, Munsey Bldg., Wash., D. C., CA, $9,734,000 Eugene Talmadge Memorial HOSPITAL, AUGUSTA, GA. State Hospital Auth., State Capitol, Atlanta, Ga., Bids Mar. 6, awarded Mar. 17. CD 3/10, under LB.

Algernon Blair, P.O. Box 749, Montgomery, Ala., CA, $560,000, 70 RESIDENCES, MACON, GA. Riverside Hills, Inc., c/o contractor.

C. J. Smith & Son and E. W. Carter, Thomasville, Ga., Owner Builds, $750,000, 100 RESIDENCES, THOMASTON, GA.

Coogan & Beatty, 211 E. 4 Ave., Hialeah, Fla., Owner Builds, $380,000, 38 RESIDENCES, FORT LAUDERDALE, FLA.

East Coast Constr. Co., 1514 Gary St., Jacksonville, Fla., LB, $803,500, Paxon Field HIGH SCHOOL, Melson Ave. and Louise St., JACKSONVILLE, FLA. Duval Co. Bd. P. Instruction, 605 Ocean St., Jacksonville, Fla. Bids Mar. 18. Edgar A. Poppell, 1354 Woodward Ave., Jacksonville, 7, Fla., engr Bernard W. Close, Consolidated Bldg., Jacksonville, 2, Fla., archt. CD 2/12.

Clutter Constr. Co., 17501 Collins Ave., Miami Beach, Fla., LB, $653,029, MOTOR COURT, HALLANDALE, FLA. P & E Realty Corp., c/o Maurice S. Weintraub, archt., 235 Lincoln Rd., Miami Beach, Fla. Bids Mar. 12. CD 3/10.

Mackie Co., Inc., 2818 S. W. 22 St., Miami, Fla., Owner Builds, $350,000, 46 RESIDENCES in Elm Park, HIALEAH, FLA.

Florida Sun Deck Homes, Box 307, Homestead, Fla., Owner Builds, $350,000, 75 RESIDENCES, HOMESTEAD, FLA.

▲ **Geo. D. Auchter Co.**, P.O. Box 1193, Jacksonville, Fla. CA, $1,357,670 HOSPITAL addn., JACKSONVILLE, FLA. St. Vincents Hospital, c/o Reynolds, Smith & Hills, archts., 227 Park St., Jacksonville, Fla. Bids Feb. 17. CD 3/6, under LB.

J. Hilbert Sapp, 1905 N. Orange Ave., Orlando, Fla., Owner Builds, $850,000, 97 RESIDENCES, Project No. 2, LAKELAND, FLA.

Gottlieb & Co., 1506 S. W. 3 Ave., Miami, Fla., Owner Builds, $425,000. 54 RESIDENCES, MIAMI, FLA.

Country Constr. Co., 9880 S.W. 104 St., Miami, Fla., Owner Builds, $325,000, 51 RESIDENCES, MIAMI, FLA.

Ace Builders Corp., 2571 S.W. 37 Ave., Miami, Fla., Owner Builds, $360,000, 40 RESIDENCES, MIAMI, FLA.

Ridgewood & Fleming, Ormond Beach, Fla., Owner Builds $316,000 38 RESIDENCES, ORMOND BEACH, FLA.

J. C. Emerson & Son, 62 St. and 22 Ave. N., St. Petersburg, Fla., Owner Builds, $450,000, 50 RESIDENCES, ST. PETERSBURG, FLA.

▲ **Arnold Constr. Co.**, Murray Bldg., Palm Beach, Fla., LB, $1,500,000, HOSPITAL addn., WEST PALM BEACH, FLA. St. Mary's Hospital, 900 4 St., West Palm Beach, Fla. Bids Mar. 4. CD 3/6.

Brice Bldg. Co., P. O. Box 1028, Birmingham, Ala., LB, $485,777, OFFICE, Mountain Brook, BIRMINGHAM, ALA. Liberty National Insurance Co., c/o Van Keuren, Davis & Co., archts., 3004 7 Ave. S., Birmingham, Ala. Union Carbide & Carbon Corp., lessee. Bids Mar. 17. CD 3/6.

Allied-Benes Corp., 2826 E. 130 St., Cleveland, O., CA, $150,000 PLANT, BIRMINGHAM, ALA., Hammond Iron Co., Warren, Pa. CD 11/21.

Southern Builders, Inc., P. O. Box 1815, Shreveport, La. LB $599,462. HIGH SCHOOL, MINDEN, LA. Webster Parish School Bd., Minden, La. Bids Mar. 17. CD 2/18.

▲ **John A. Johnson Constr. Corp.**, 206 Rogers St. N. E., Atlanta, Ga., CA, $3,500,000, OFFICE, MUSCLE SHOALS, ALA. Wallace C. Pitts, c/o contractor. Tennessee Valley Authority, lessee.

Pittman Constr. Co., P. O. Box 8116, New Orleans, La. LB $919,864. East and West Gulfport Junior High SCHOOLS, GULFPORT, MISS. Gulfport Municipal Separate School Dist., Gulfport, Miss. Bids Mar. 18. CD 2/26.

Roy O. Allen, 5974 Marshal Foch St., New Orleans, La. Owner Builds. $340,000. 30 RESIDENCES, NEW ORLEANS, LA.

Good Citizens Realty Corp., 1809 Dryades St., New Orleans, La. Owner Builds. $320,000. 32 RESIDENCES, NEW ORLEANS, LA.

John T. Gough, 7727 Spruce St., New Orleans, La. Owner Builds. $300,000. 30 RESIDENCES, NEW ORLEANS, LA.

▲ **John Wile Constr. Co.,** 826 Humler Ave., Louisville 10, Ky. LB $843,600. armored SCHOOL, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Otis & Grimes, Tyler Bldg., Louisville, Ky., archts. Bids Mar. 12. CD 2/11.

R. P. Farnsworth & Co., 1515 S. Salcedo St., New Orleans, La., LB $974,600, Phase 2, GAS SERVICE CENTER, MEMPHIS, TENN. Memphis, Light, Water & Gas Co., 179 Madison St., Memphis, Tenn. Bids Mar. 12. CD 3/6.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Ill., Rantoul**—BUILDING—B.A. 4/7—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, rehabilitation, remodeling of Building P-3 (Phase II), Chanute Air Force Base, Eng. 11-032-53-47. Extended date CD 3/2.

BIDS ASKED—BUILDINGS

Ind., Hammond—SCHOOL—B.A. 4/7—School City of Hammond, 5935 Hohman Ave., James Whitcomb Riley School. Turner & Turner, 5944 Hohman Ave., archts. CD 12/10, under LB.

▲ **Ill., Chicago** — SANITARIUM — B.A. 4/21 — Cook County TB Sanitarium District, 7401 W. Madison St., Forest Park, 2 story, bsmnt., 400x400 ft., brick, stone, TB sanitarium on County Line Rd. and 55 St. (County Work Farm) Lyons Twp. near Tiedtville, $3,000,000. Fugard; Burt Wilkinson & Orth 520 N. Michigan St., Zone 11, archts. CD 11/12/48.

Ind., Michigan City—SHOPPING CENTER—Bids Asked—Ralph Ritner, 3307 Tilden St., shopping center. $330,000. E. C. Doeppers, 810 Lincolnway, Laporte, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 361 E. Broad St., Columbus,

Georg Vang, Inc., Grant Bldg., Pittsburgh, Pa., LB $1,838,755 Proj. C-38, Sandusky River Bridge; LB $949,230, Proj. C-38A, Sandusky bridge Piers and abutments only;

Allied Structural Steel Companies, 20 N. Wacker Dr., Chicago, Ill., LB, $924,390, Sandusky Bridge Deck girder spans only, Proj. C-28b. Bids Mar. 18. CD 2/26.

▲ **OHIO**—Ohio Turnpike Comn., 361 E. Broad St., Columbus, 15,0.

Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Pa., LB, $5,270,991, 5.3 mi. between South Range Rd. and Western Reserve Rd., C-2, Mahoning Co.; LB, $11,143,623, Combined C-2 and C-3, Mahoning Co.;

Alleghany Asphalt & Paving Co., Inc., Bingham and 8 Sts., Pittsburgh, Pa., LB, $5,288,942, 4.7 mi. between Western Reserve Rd. and point 3,400 ft. west of Raccoon Road C-3, Mahoning Co.;

C. F. Lytle Co. & Green Constr. Co., 250 Insurance Exchange Bldg., Sioux City, Ia., LB, $4,542,611 4 mi. between Lintz Townline Rd. and Warren Rd., Proj. C-7, Trumbull Co., Bids Mar. 18, CD 2/26;

Smith Constr. Co., 1936 Glenwood Ave., Youngstown 0., LB, $1,629,442, 2.9 mi. between Co. Line Rd. and Lintz Townline Rd., C-6, Trumbull Co., Bids Mar. 18. CD 3/5.

▲ **James McHugh Constr. Co.,** 6449 South Park Ave., Chicago, Ill. and **M. J. Boyle & Co.,** 2480 N. Elston Ave., Chicago, Ill., CA, $1,732,312, east sect.;

Bates & Rogers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., CA, $1,400,000 west sect., for rapid transit routes, east; East Cleveland to Union Terminal limits; west; W. 102 to W. 117 Sts., CLEVELAND, O. Cleveland Transit System, 1404 E. 9 St., Cleveland, O. Bids Mar. 11. CD 3/18, under LB.

Raleigh Burk Co., 3815 Massachusetts Ave., Indianapolis, Ind., CA, $923,173 constr., E. 37 and E. 38 St. main relief sewers, INDIANAPOLIS, IND. Bd. P. Wks. City Hall, Indianapolis, Ind. Bids Mar. 12, awarded Mar. 19. CD 3/18, under LB.

▲ **J. F. Pritchard & Co.,** 908 Grand Ave., Kansas City, Mo., CA, Est. $17,000,000, natural gas storage, Herscher Area, Kankakee Co., ILLINOIS Natural Gas Storage Co., 20 N. Wacker Dr., Chicago 6, Ill. Awarded Mar. 16. CD 7/9/.

▲ **Williams Bros. Co.,** National Bank of Tulsa Bldg., Tulsa, Okla., CA. Approx. $2,000,000, gas transmission line from Houston to Port Arthur, TEXAS. Sinclair Pipe Line Co., Commerce Bldg. Addn., Houston, Tex. CD 12/11.

BUILDINGS

LOW BIDS AND CONTRACTS

Knowlton Constr. Co., 106 N. Main St., Bellefontaine, O. CA. $597,000. DORMITORIES 2 and 3, 2 and 3 story, bsmnt., rein.-con. brick constr. ATHENS, O. Ohio University, Athens, O. Bids Feb. 27. CD 3/5, under LB.

Mercury Builders, 5412 N. North Ave., Chicago, Ill., CA, $225,000. FACTORY addn., CHICAGO, ILL. W. F. L. Drum Co., 1730 N. Damen Ave., Chicago, Ill. Louis A. Balluf, 35 E. Wacker Dr., Chicago, 1, Ill., archt. Awarded Mar. 11.

Chell & Anderson, 176 W. Adams St., Chicago, 3, Ill., CA, $500,000, 2 story, bsmnt., brick, concrete, stone elementary SCHOOL, CHICAGO, ILL. St. Nicholas Ukrainian Parish, Rice and Oakley Sts., Chicago, Ill. Bids Mar. 4. CD 3/2.

Van Etten Bros., 11024 S. Michigan Ave., Chicago, 28, Ill., CA, $850,000, 3 story, 45x130 ft., steel, stone MONASTERY and 1 story, 125x105 ft. GYMNASIUM, 1 story, 60x115 ft., brick, concrete CHAPEL, CHICAGO, ILL. Mendel Catholic High School, 250 E. 111 St., Chicago, Ill. Bids Oct. 10, awarded Mar. 11. CD 10/10.

Foster R. Orr Co., 4414 Vine St., Denver, Colo., CA, $800,000, 80,000 sq. ft. WAREHOUSE, 47 and Whipple Sts., CHICAGO, ILL. Gates Rubber Co., 990 S. Broadway, Denver, Colo. J. F. Siefried, 807 Jackson St., River Forest, Ill., archt.

▲ **Service Realty & Investment Co.,** 100 E. State St., Peoria, Ill., CA, $3,000,000. 24 store, SHOPPING CENTER, parking area, PEORIA, ILL. Sheridan Village, Shopping Center, c/o Simpson & Peck, archts. 7917 S. Exchange St., Chicago, 17, Ill. Awarded Mar. 2.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Mo., Dixon—B.A. 4/9—City, J. E. Blanton, mayor, water extens.; sanitary sewer extens. Plans deposit $15 each, Russell & Axon, 408 Olive St., St. Louis, Zone 2, engrs. CD 10/2/46.

▲ **Tex., Galveston**—B.A. 4/28—City, City Hall, Part 1, 3 mi. 30- to 54-in. sewer interceptor, incl. sewage lift station, $800,000; Part 2, 6.4 m. g.p.d. activated sludge sewage treatment plant, $1,600,000. Extended date. Joe J. Rady, Box 697, Galveston, engr. CD 3/6.

Mo., Steeleville—AUTOMATIC DIAL OFFICES—B.A. 4/30—Steeleville Telephone Exchange, Inc., Steeleville, community automatic dial offices, REA Telephone Proj. Missouri 536A, Drazen & Assoc., 8135 Forsyth Blvd., Clayton, Zone 24, engrs. CD 9/3/52.

Missouri—TELEPHONE LINES—B.A. 5/5—Steeleville Telephone Exchange Inc., Steeleville, 325 mi. aerial wire, cable lines, Crawford, Washington, Dent and Iron Counties, REA Telephone Proj. Missouri 536A. Drazen & Assoc., 8135 Forsyth Blvd., Clayton, Zone 24, engrs. CD 1/21.

BIDS ASKED—BUILDINGS

▲ **Tex., Abilene**—HIGH SCHOOL—B.A. 4/14—Abilene Independent School Dist., Abilene, high school. $2,000,000. Plans deposit $75. Extended date. David S. Castle Co., Box 124, engr.-archt. CD 3/16.

† **Tex., Texarkana**—CABLE PLANT—B.A. 4/14—U. S. Govt., c/o Lt. Col. H. N. Ostrom, Signal Secy. Headquarters, Fourth Army, Fort Sam Houston, telephone cable plant exten. and recentering for new dial plant. $75,000. CD 7/6/51.

Mo., Steeleville—BUILDINGS—B.A. 7/15—Steeleville Telephone Exchange, Inc., Steeleville, 3 bldgs. to house automatic dial equip. in communities of sys. Drazen & Assoc., 8135 Forsyth Blvd., Clayton, Zone 24, engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Electrical Builders Assoc.,** Mayville, N. D., LB $179,697, est. $271,126, addns. and modifications to Huron, Mount Vernon, Sioux Falls and Watertown sub-stations for 115-kv operation, Missouri River Basin Proj., Spec. DC 3883, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Huron, S. D. Bids Mar. 12. CD 3/2.

† **Chambers Constr. Co.,** 1954 Temple Dr., Houston, Tex., LB, $500,000, est. $600,000. training squadron headquarters and operations bldgs., Inv. No. Eng 41-243-53-70, ELLINGTON AIR FORCE BASE, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Mar. 18.

Panhandle Constr. Co., 620 Texas St., Lubbock, Tex. LB, $146,838. some water lines, Westchester Addn., LUBBOCK, TEX. City, Lubbock, Tex. Bids Mar. 12. CD 3/18.

† **Bureau Reclamation, Dpt. Interior,** Grand Junction, Colo., rejected bids Mar. 4, rein.-con. lining in various reachers of Fire Mountain Canal, Station 156 plus 00 to 888 plus 50, Paonia Proj., Spec. 400C-28, COLORADO. CD 2/25.

† **Reichard Eng. Co.,** 3627 E. 26 Ave., Denver, Colo., LB, $109,496, ammunition storage facilities, Lowry Air Force Base, Inv. 25-066-53-141, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 17. CD 2/24.

† **Ideal Cement Co.,** Denver National Bldg., Denver, Colo. CA, $238,700. 62,000 bbl. bulk cement for Tiber Dam, Marias Div., Missouri River Basin Proj., Spec. DS 3874, MONTANA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Feb. 10, awarded Mar. 10. CD 2/17, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **U. S. Eng.,** 1709 Jackson St., Omaha, Neb. cancelled bids to have been opened Mar. 24. forge shop addn. to Bldg. No. 501, Twin Cities Arsenal, Inv. 25-066-(Neg 53-1), MINNEAPOLIS, MINN. CD 3/18.

Grasso Bros., 3900 Reavis Barracks Rd., Affton 23, Mo. Owner Builds. 2 story, bsmnt., brick, concrete, circular-shaped, 205 ft. in diam., 66,000 sq. ft. SHOPPING CENTER, incl. parking facilities, Gravois and Rock Hill Rds., AFFTON (ST. LOUIS 23 P.O.), MO. James T. Wisnewski, 705 Chestnut St., St. Louis 1, Mo., archt.

George Moeller Constr. Co., 3007 Wyoming St., St. Louis 18, Mo. LB $362,145, est. $330,000. 2 story, bsmnt., brick, rein.-con., 25,000 sq. ft. DORMITORY

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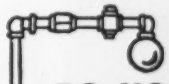

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incl. OFFICES, CLAYTON (ST. LOUIS 5 P.O.), MO. Concordia Seminary, 801 DeMun Ave., Clayton 5, Mo. Bids Feb. 26. CD 2/12.

John B. Gutmann Constr. Co., 1301 S. Vandeventer Ave., St. Louis 10, Mo. CA 200x300 ft., brick, concrete slab FACTORY and WAREHOUSE, 9312 U. S. No. 66, ST. LOUIS COUNTY, MO. Ritepoint Co., 4350 S. Kingshighway, St. Louis 9, Mo. Marcel Boulicault, Ambassador Bldg., St. Louis 1, Mo., archt.

† **Frederickson Building Corp.,** Columbus, O., LB **$372,242,** rehabilitation of LOAD LINE No. 4 at Cornhusker Ordnance Plant, Inv. 25-066-53-153, GRAND ISLAND, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 17. CD 3/3.

J. E. Morgan & Sons, Box 6029, Dallas, Tex., CA **$505,125,** WAREHOUSE and small connecting OFFICE, DALLAS, TEX. J. I. Case Co., 700 State St., Racine, Wis. CD 2/27.

W. B. Abbott, Jr., c/o Butler-Brasher Co., archts., 412 Avenue M, Lubbock, Tex. CA **$475,175,** est. $400,000. 100x350 ft. brick, hollow tile Junior HIGH SCHOOL, DENVER CITY, TEX. Denver City Independent School Dist., Denver City, Tex. Bids Mar. 10.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Calif., Monterey Park—RECREATION BLDG.—B.A. 4/13—City, City Hall, reinforced-brick, steel, recreation bldg. $130,000. Raphail Nicholais, 6239 Wilshire Blvd., Los Angeles, archt.

▲† **California**—B.A. 4/15—U. S. Eng., 751 S. Figueroa St., Los Angeles, Rio Hondo Channel imprv., Whittier Narrows River Mile 4.19 to River Mile 1.53, Rivera, CIVENG-04-353-53-36. $2,500,000. CD 1/21/45.

† **Ariz., Tucson**—WAREHOUSE—B.A. 4/17—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., warehouse, Davis-Monthan Air Force Base, ENG-04-353-53-104. $500,000. Extetnded date. CD 3/11.

BIDS ASKED—BUILDINGS

▲ **Calif., San Diego**—HOUSING—B.A. 4/14—Dpt. Navy, San Diego, construct, manage and finance 16 duplex units and 77 multiple family Military Housing Project N-47. $2,000,000. Plans deposit $200. CD 11/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Ball & Simpson,** 685 Delaware St., Berkeley, Calif., and **Stanley Ball,** 1101 Westminster Ave., Alhambra, Calif., LB. **$2,726,836,** apron and taxiway, Davis-Monthan Air Force Base, ENG-04-353-53-113, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 17. CD 2/25.

▲† **Bethlehem Pacific Coast Steel Co.,** 20 and Illinois Sts., San Francisco, Calif., CA., **$2,844,406,** tower steel for Chief Joseph-Snohomish 345 kv line, Inv. 6913, WASHINGTON. Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore. Awarded Mar. 17. CD 3/10, under LB.

▲† **United Concrete Pipe Corp.,** Box 425, Baldwin Park, Calif., LB, **$2,589,202,** earthwork, structures, etc. Unit 2, Delano-Earlimart Irrigation Dist., Central Valley Proj. Spec. DC 3889, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lindsay, Calif. Bids Mar. 17. CD 3/10.

▲ † **Frederickson & Watson Constr. Co. and M. & K. Corp.,** 873 81 Ave., Oakland, Calif., LB, **$2,488,884** constr. Sly Park Dam, Central Valley Proj., American River Div., Spec. DC 3888, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Folsom, Calif. Bids Mar. 12.

Morrison-Knudsen Co., Inc., 411 W. 5 St., Los Angeles, Calif., LB, **$978,977,** preparation of roadbed for relocation of main railroad line, approx. 24.73 mi. Kern Co., EDWARDS, CALIF. Atchison, Topeka & Santa Fe. Ry., I H. Powell, ch. engr. (Coast Lines), 121 E. 6 St., Los Angeles, Calif. CD 2/12.

▲ **Walter C. Groshong,** 4135 California St., Long Beach, Calif., CA, **$1,896,548,** quay wall and rein.-con. bulkhead at Pier 1, LONG BEACH, CALIF. Long Beach Harbor Dept., 1333 El Embarkadero St., Long Beach, Calif. Bids Mar. 5. CD 3/19, under LB.

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—36"	22.00	20.50
1x2—12"	6.15	5.60
—15"	6.60	6.00
—18"	7.50	6.50
—24"	9.00	8.00
—36"	12.00	11.00

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BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bechtel Corp.,** 220 Montgomery St., San Francisco, Calif., CA, $44,000,000, Morro Bay Steam PLANT at north end of Morro Bay, San Luis Obispo Co., CALIFORNIA. Pacific Gas & Electric Co., 445 Sutter St., San Francisco, Calif. Awarded Mar. 17. CD 3/10.

▲ **Fred S. Macomber,** 8818 Melrose Ave., Los Angeles, Calif., CA, $1,287,000 low-rent HOUSING, California Ave., BAKERSFIELD, CALIF. Kern Co. Housing Auth., 517 Roberts Lane, Bakersfield, Calif. Bids Mar. 11, awarded Mar. 13. CD 3/20, under LB.

The Austin Co., 777 E. Washington St., Los Angeles, Calif., CA, $334,000, 88,062 sq. ft. precast concrete WAREHOUSE, EAST LOS ANGELES, CALIF. Simmons Co., 540 S. Alameda St., Los Angeles, Calif.

Baruch Corp., 231 S. San Vicente Blvd., Los Angeles, Calif., CA, $323,200, 1 story, brick Junior High SCHOOL, EL SEGUNDO, CALIF. El Segundo Unified School Dist., 740 Main St., El Segundo, Calif. Bids Mar. 13. CD 3/3.

Schneider Development Co., 201 S. Pomona Ave., Fullerton, Calif., CA, $300,000, 45 frame, stucco DWELLINGS, Olive Ave., FULLERTON, CALIF. Gilbert Development Co., 620 S. Vance St., Santa Ana, Calif.

Harvard Plaza, 450 S. Beverly Dr., Beverly Hills, Calif., Owner Builds. $332,500, 35 stucco DWELLINGS in Tract 17572, GARDENA, CALIF.

† **Haddock Engineers Ltd.,** 1616 S. Greenwood St., Montebello, Calif., LB; $262,030, LABORATORY at C. B. Center, PORT HUENEME, CALIF. Dpt. Navy, San Diego, Calif. Bids Mar. 13.

C. A. Larsen, 2057 Kurtz St., San Diego, Calif., CA $468,468, Kearny High SCHOOL addn., Kearny Mesa SAN DIEGO, CALIF. San Diego Unified School Dist. 825 Union St., San Diego, Calif. CD 11/16/50.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Ont., LB. $700,000, DORMITORY GROUP and RECEPTION CENTER, Ontario Children's Mental Hospital, ORILLIA, ONT. Ontario Dpt. P. Wks., Parliament Bldgs., Ottawa, Ont. G. N. Williams, c/o owner, ch. archt. and deputy minister.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **ALASKA**—Alaska Road Comn., Dpt. Interior, 4 and Harris Sts. Juneau.

Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho. LB. $2,089,003, clearing, grading, draining surf. 45.3 mi. Richardson Hy. in Section G. Bids Mar. 17. CD 2/26.

Proposed Projects

WATER SUPPLY

▲ **Ky., Louisville**—Louisville Water Co., S. Third St., imprvs., extens., water sys. $3,000,000. Byron E. Payne, c/o owner, engr. CD 11/23/51.

Pa., Sharpsville—Borough Council, WW sys. $440,000.

Tex., Goldsmith—Gulf Oil Corp., Gulf Bldg., Houston, Phillips Petroleum Co. and Pure Oil Co., Bartlesville, Okla., 30 mi. Big-Inch water line from Wink area to near here, $400,000; 6 water supply wells, approx. 90,000 bbl. daily supply capacity for injection in caverns, near here, $125,000.

SEWERS, WASTE DISPOSAL

▲ **Calif., Oakland**—City, City Hall, $2,150,000 bond election Apr. 14, sewerage system addns. Clyde Kennedy Engineers, 604 Mission St., San Francisco, and Harry N. Jenks & Wm. O'Connell, 109 Stevenson St., San Francisco, consult. engrs. CD 5/16/45.

Minn., Glenco—City, Selma Zavoral, clk., voted $325,000 bonds Mar. 10, sewage treatment plant. Banister Eng. Co., 1549 University Ave., St. Paul, consult. engr. CD 3/2.

STREETS AND ROADS

▲ **COLORADO**—State Hy. Dpt., 518 State Office Bldg., Denver,

Alamosa Co.—stab., asph. paving S.H. 10, Alamosa-West, C 30-0010-14, $200,000.

Chaffee Co.—stab., oil process S.H. 6, Poncha-Springs-Jct S.H. 291, C 31-006-07 $75,000.

Douglas Co.—resurf., oil S.H. 83, Arapahoe County Line S.E., C 47-0083-03, $90,000.

resurf., S.H. 1, Blakeland-Sedalia, X C 47-0001-07 $310,000.

Eagle Co.—grading, surf, S.H. 131, Wolcott-State Bridge, C 44-0131-05, $60,000.

El Paso and Elbert Counties—Stab., oil process S.H. 4, Rama-Simla, C 34-0004-11, $70,000.

Grand Co.—stab. asphalt S.H. 2, Kremmling-Muddy Pass, C 53-0002-17, $210,000.

betterments, S.H. 2, Byers Canon, C 53-0002-18, $75,000.

Gunnison Co.—paving Tomichi St., S.H. 6 in Gunnison, C 40-0006-19, $74,000.

Kiowa Co.—stab., asph. S.H. 59, Eads-South C 45-0059-07, $250,000.

Lincoln Co.—stab., asph. S.H. 8, Hugo-East C 33-008-15, $250,000.

Moffat Co.—stab., oil process S.H. 13, Craig-North C 42-0013-19, $83,000.

stab., asph. paving S.H. 2, Massadona-West C 42-0002-23, $270,000.

Montezuma Co.—resurf. Main St. S.H. 10 in Cortex, C 32-0010-16, $80,200.

stab., oil process, S.H. 10, Cortez-N.W., C-32-0010-13 $210,000.

stab., oil process S.H. 10, Mancos-West, C 32-0010-18 $250,000.

oil process surf. S.H. 147, Dolores-Lewis, C-32-0147-01, $68,000.

Park Co.—stab., oil process S.H. 4, Antero Jct. West C 54-0004-12, $80,000.

oil processing S.H. 9, Alma-Hoosier Pass, C 54-0009-04, $70,000.

Rio Blanco Co.—stab., oil process S.H. 13, Meeker-South, C 49-0013-19, $175,000.

Rio Grande and Saguache Counties—seal coat S.H. 15 Monte Vista-North, C 35-0015-12, $109,000. Mark U. Watrous, state hy. engr.

Colo., Denver—City and Denver Co., City and County Bldg., Street Paving District No. 191, concrete curb, gutter, sidewalk, grav. base course b. conc. paving etc. $212,900; Street Paving District No. 193, concrete curb, gutter, sidewalk, grav. base course b. conc. paving, etc. $171,500; Street Paving District No. 199, concrete curb, gutter, sidewalk, grav. base course, b. conc. paving, etc. $212,500; Alley Paving District No. 243, c. conc. pavements and necessary incidental imprvs. in alleys, $79,700. Terry Owen, City and County Bldg., city engr. CD 2/27/50.

Tex., Houston—City, City Hall, 900 Brazos St., exten. Memorial Dr. along north side on Buffalo Bayou, $800,000. Lockwood & Andrews, Union Natl. Bank Bldg., consult. engrs. CD 8/28/52.

Va., Alexandria—City, City Hall, street constr. program, $800,000. C. L. Watkins, c/o owner, city engr. CD 1/27.

EARTHWORK, WATERWAYS

▲ **California**—Pacific Gas & Electric Co., 245 Market St., San Francisco, constr. Pit No. 6 Dam and Power House on Pit River, Shasta Co. $20,000,000. CD 4/29.

▲ **Tex., Goldsmith**—Gulf Oil Corp., Gulf Bldg., Houston, Phillips Petroleum Co. and Pure Oil Co., Bartlesville, Okla., pressure-maintenance, incl. providing underground caverns and injecting water and gas into reservoir, 18,240 acres involved in general program. $3,500,000.

▲ **Tex., Lindale**—Town, C. J. Boyd, mayor, 800-acre lake on Duck Creek, to provide water for power users as well as the city, $2,000,000.

AIRPORTS

▲† **Tex., Ellington Air Force Base**—AIRDROME EXPANSION, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, airdrome expansion facilities, incl. heavy concrete type paving for airplane useage, $3,000,000; drainage facilities, $2,000,000. Freese, Nichols & Turner, 2111 C & I Life Bldg., Houston, consult. engrs. CD 11/28.

▲† **Tex., Lackland Air Force Base**—STORE, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Plans by Atlee B. & Rob. M. Ayres, consult. engrs. and archts., Transit Tower Bldg., San Antonio, Tex., Store No. 1, large masonry sales store with outside utilities, walks and roads in area, $2,000,000; Store No. 2, general sales store, with outside utilities, walks and roads, $2,500,000; Theatre No. 1, modern fireproof, masonry theatre, all outside utilities, walks and roads in area, $800,000; Theatre No. 2, modern fireproof masonry theatre, all outside utilities, walks and roads in area, $700,000. CD 5/2/51.

▲† **Tex., San Antonio**—CLASSROOM—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., plans by Ralph H. Cameron, 1519 Transit Tower Bldg. class room addn. to Bldg. 2263, Brooks Army Medical Center, $5,000,000.

Wash., Yakima—LIGHTS, etc.—City, City Hall, defeated bonds Mar. 10, installing high intensity lights, $66,000 extending runways, $300,000, at airport. A. B. Collins, city engr. CD 12/17/52.

PUBLIC BUILDINGS

Calif., Fresno—JAIL, etc.—City, City Hall, bond election Apr. 13, holdover jail and quarters for emergency hospital, $600,000. CD 3/12.

▲ **Calif., Long Beach**—SCHOOL—Long Beach Bd. Educ., 715 Locust Ave., plans by Van Alstine & McLean, 3916 Myrtle Ave., 1 story, stucco Leland Stanford Junior High School. $1,140,000. CD 11/16/50.

▲ **Calif., Richmond**—SCHOOL—Richmond Union High School Dist., 1108 Bissell Ave., plans by Chas. F. Strothoff, 1855 Market St., San Francisco, John Muir High School. $2,300,000. CD 5/22/52.

▲ **Calif., San Mateo**—SCHOOLS—San Mateo Elementary School Dist., 120 N. Elsworth Ave., voted $2,000,000 bonds, schools. CD 1/22.

Conn., Rocky Hill—SCHOOL—Town, c/o School Bldg. Comn., Bd. Educ., plans by Nichols & Butterfield, 967 Farmington Ave., West Hartford, elementary and Junior High School, Chapin Ave. Site. $800,000. CD 3/23/51.

▲ **Ill., Chicago**—DENTISTRY, etc.—University of Illinois, 1853 W. Polk St., denistry-medicine-pharmacy bldg., $1,400,000; remodeling dentistry-medicine-pharmacy Units 1 and 2, $500,000; remodeling animal hospital facilities, $85,000.

Ill., Chicago—ALCOHOLICS HOSPITAL—State, State Capitol, Springfield, plans by Louis Gerding, state archt., Armory Bldg., Springfield, Illinois, State Alcoholics Hospital, $900,000.

Ill., Peoria—STATE OFFICE—State, State Capitol plans by Louis Gerding, state archt., Armory Bldg., Springfield, state office bldg. $500,000.

▲ **Ill., Springfield**—STATE OFFICE—State, Springfield, plans by Louis Gerding, ch. state archt., Armory Bldg., state office bldg. $12,500,000.

▲ **Ill., Urbana**—ARCHITECTURE, etc.—University of Illinois, Urbana, plans by Ernest Stoeffer, superv. archt., Administration Bldg., University of Illinois, Urbana, architecture bldg. addn, $2,200,000; band bldg. $700,000; home economics bldg., $3,900,000; law bldg., $2,100,000; life sciences bldg., first unit, $5,250,000; power plant addn., $912,000; remodeling, imprvs. minor structures, addn., Davenport Hall, remodeling preliminary plans for plant science bldg., $2,200,000; student housing, one unit, $1,600,000; veterinary medicine clinic, first unit, $450,000; utilities distr. sys., $1,208,500. CD 4/13/45.

Ia., Boone—SCHOOL—Bd. Educ., Boone, voted $875,000 bonds schools.

▲ **Ia., Cedar Rapids**—SCHOOLS—Bd. Educ., 346 2 Ave. S.W. voted $2,500,000 bonds, schools. CD 10/6.

Ia., Iowa City—SCHOOL—Bd. Educ., Iowa City, voted $795,000 bonds, schools. CD 1/20.

▲ **Ia., Marshalltown**—NURSING HOME—State Bd. Control, State Capitol, Des Moines, nursing home at Iowa Soldiers Home. $2,000,000.

▲† **La., Camp Polk**—AMMUNITION IGLOOS, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., plans by Brown & Butler, consult. engrs. and archts., 1213 Nicholson Dr., Baton Rouge, ammunition igloos, $3,000,000; post engineer field, maintenance shop and engineer shed, $900,000; ordnance administration bldg., $650,000; hardstands, $500,000.

Mich., Houghton—ORE RESEARCH LABORATORY—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, low grade ore research center laboratory, Michigan College of Mining and Technology, $510,000. CD 3/3/47.

Minn., Bloomington (P.O. Minneapolis)—SCHOOL— Bd. Educ., E. B. Chadwick, clk., authorized $900,000, bonds issue at Mar. 9 election grade school, 108 St. and France Ave. South, E. D. Corwin, E. 818 First National Bank Bldg., St. Paul, archt. CD 3/3.

Minn., North Branch—SCHOOL—Bd. Educ., G. Larson, clk., $595,000 bond election Mar. 24, grade-high school addn., Harris Grade School addn., Alemlund Grade School addn. H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt.

N. H., Peterborough—SCHOOL—School Dist., Peterborough, Sharon, Hancock and Temple, regional school. $500,000.

† **N. J., Hackensack**—ARMORY—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., plans by A. Davis & Son, 30 Journal Sq., Jersey City, N. J., ORC armory. $500,000-$1,000,000. CD 7/25/52.

▲ **N. Y., Kew Gardens**—CRIMINAL COURTS, etc.—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Walker & Poor, 787 Fifth Ave., New York, Zone 22, criminal courts bldg. and city prison, on site behind Borough Hall. $12,000,000.

N. Y., New York—SCHOOL—Bd. Educ., 110 Livingston St., Brooklyn, Zone 1, plans by William Hufner, c/o owner, altering P.S. 43, 165 Brown Pl. $700,000.

▲ **O., Delaware**—SCHOOL—Bd. Educ., D. R. Smith supt., plans by Galen Oman & Earl Clelland, 2901 N. High St., Columbus, elementary and junior high school, $1,300,000.

O., Youngstown—HIGH SCHOOL—Bd. Educ., 20 W. Wood St., plans by Kling & Frost, 661 Wick Ave., East High School addn. and remodeling, incl. 90x95 ft. gymnasium, etc. $900,000. CD 5/15/47.

▲ **R. I., Johnston**—HIGH SCHOOL—Town, Supt. Schools, 80 Greenville Ave., Junior-Senior High School, Memorial Dr. and Atwood Ave. $1,435,000. CD 1/15/51.

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., 3700 Ross St., plans by Bennett & Crittendon, 2814 Fairmount St., Elementary School No. 1, southwest Oak Cliff, Illinois St., $725,000; plans by Sam Biderman, Natl. City Bldg., Elementary School No 4, on Idaho St., $750,000; plans by Perkins & Cooper, 2203½ Cedar Springs St., addn. to school system administrative bldg., $300,000; plans by Thomas, Jameson & Merrill, 820 N. Harwood St., elementary school, Abrams Rd. and Lovers Lane, $775,000; plans by George Christensen, 709 N. St. Paul St., Elementary School No. 5, $600,000; plans by J. A. Pitzinger, Southland Life Bldg., N. R. Grozier Technical High School addn., $475,000; plans by Williams & Williamon, Doggett Bldg., North Dallas High School addn., physical education plant, $575,000; plans by Witchell, White & Edwards, 1509 Cochran St., Woodrow Wilson Physical Education plant and high school addn., $775,000. CD 10/24.

▲ **Tex., Lindale**—POWER PLANT—Town, C. J. Boyd, mayor, new light and power plant unit, $2,000,000; enlarging, imprv. light and power plant, $750,000.

▲ **Tex., Lindale**—QUARTERS—Town, C. J. Boyd, mayor, erect quarters for proposed steel plant. $1,000,000.

▲† **Tex., Marshall**—STORAGE MAGAZINES, etc.—U. S. Eng., Box 61, Tulsa 2, Okla., 14 storage magazines and appurtenances, $500,000; 11 warehouses, $1,000,000, Longhorn Ordnance Works, Inv. No. Eng-34-066-53-112.

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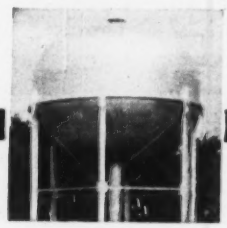

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CYLINDERS

Va., Alexandria—GYMNASIUM, etc.—City, City Hall, plans by Joseph H. Saunders, Jr., 121 S. Columbia St., gymnasium-auditorium bldg. $665,000.

▲† Va., Little Creek—BARRACKS—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, plans by Woodward, Oliver & Smith, 716-A Boush St., Norfolk, 900-man barracks, Naval Amphibious Base, NOY 77144. $1,300,000. Knappen, Tippetts, Abbett, McCarthy, 62 W. 47 St., New York, N. Y., consult. engrs. CD 9/2.

▲† Va. Quantico—ADMINISTRATION, etc.—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., plans by Marcellus Wright & Son, 100 E. Main St., Richmond, admin. bldg., $1,500,000; plans by Merrill C. Lee 601 E. Franklin St., Richmond, communications officers school, $350,000; plans by Whitman, Requardt Assoc., 1304 St. Paul St., Baltimore, Md., maintenance shop bldg., $900,000, at Marine Corps Schools.

Alta., Oliver—SERVICE, etc.—Alberta Dpt. P. Wks., Parliament Bldg., Edmonton, service bldg., completion nurses home and boiler room, Provincial Mental Hospital. $860,000. CD 12/3/43.

▲ Ont., Brockville—HOSPITAL—Dpt. P. Wks., Queen's Park, Toronto, Ont. (Ont. Govt.), cottages extension for 700 patients, Mental Hospital. $4,200,000.

▲ Ont., London—BARRACK—Defence Constr. Ltd., 40 Eglinton Ave. E., Toronto, 2 barrack and other buildings, Wolseley Army Barracks. $5,000,000. M. M. Dillon & Co., Bank of Toronto Bldg., consult. engrs.

Ont., Stratford—COLLEGIATE—City Council, Mayor L. Feick, collegiate addn. $700,000.

▲ Ont., Toronto—COLLEGE—Ont. Dpt. P. Wks., Queen's Park, Toronto, college for teacher training facilities. $2,200,000.

COMMERCIAL BUILDINGS

Calif., San Francisco—CHURCH—Bethel Full Gospel Church, 856 Capp St., plans by Kitchen & Hunt, 525 Market St., church, $500,000 Harold B. Hammill, 417 Market St., consult. engr.

▲ Calif., San Mateo—HOTEL—Owner, c/o Paul James Huston, archt., 543 Bryant St., Palo Alto, 7 story hotel, Third Ave. and El Camino Real. $1,500,000.

▲ Comn., Byram (Pr. Port Chester, N. Y.)—SHOPPING CENTER—Home Owners Mutual Enterprises, Inc., c/o O'Hara-Hedlander & Edson, archts., 45 E. Putnam Ave., Greenwich, shopping center, 35 stores; parking, Chickahominy Section, off Post Rd. $5,000,000. Harvey Wiley Corbett, 300 4 Ave., New York, N. Y., consult. archt.

▲ Colo., Denver—HOSPITAL—Children's Hospital, 1056 E. 19 St., plans by Linder, Hodgson & Wright, consult. engrs. and archts., Insurance Bldg., D. surgical and x-ray wing hospital addn. $1,000,000.

▲ D. C., Wash.—HOTEL, etc.—John W. Harris Assoc., Inc., 30 Rockefeller Plaza, New York, N. Y., plans by Chester L. Churchill, 17 E. 49 St., New York, N. Y. 1003-room hotel, 2,000 car garage, Rock Creek Parkway between Virginia and New Hampshire Aves. and F Sts. N.W. $30,000,000.

▲ D. C., Wash.—OFFICE—National Assoc. of Home Builders, 1028 Connecticut Ave. N.W., plans by Alvin Aubinoe, 1515 19 St. N.W., office, 1623-25 L St. N.W. $1,400,000.

Md., Baltimore—RESIDENCES—David O'Dunne, 814 Dunstons Rd., one hundred and fifty 1 story residences, Essex Sect., 75 acre tract. $750,000.

Mass., Greenfield—CHURCH—Holy Trinity Church, James W. Casey, pastor, 133 Main St., church. $900,000.

Mass., Quincy—RESIDENCES—Furnace Brook Acres Realty Trust, 383 Adams St., forty-four 1 and 2 story, residences, off Adams St. $550,000.

Mass., Woburn—RESIDENCES—Whitten Brothers, 24 White St., P.O. Box 201, Winchester, 70 ranch type residences, Old Lyndon Farm, 208 Cambridge Rd., $800,000.

Mich., Adrian—HOUSING—Adrian Sales Co., Adrian, plans by Howell Taylor, 500 Packard St., Ann Arbor, 50 or more brick, frame single homes, Riverside-Scott Subdivision, $500,000.

Mich., Oak Park—TEMPLE—Suburban Temple of Greater Detroit, Theodore D. Birnkrant, chn., Planning Comn., 900 National Bank Bldg., Detroit, plans by Montgomery Ferar, 1204 S. Woodward St., Royal Park, Jewish temple, on 15 acre site, Ten Mile Rd. between Coolidge and Greenfield. $500,000.

▲ Mo., Kansas City—APARTMENT, etc.—South Quality Hill Development Co., c/o Harold L. Oppenheimer, 16 and Baltimore Sts., Kansas City, Mo., plans by W. H. Linscott of M. H. Linscott & Son, 440 E. 63 St., Kansas City, Mo., 7 story apartment, 75,000 sq. offices, 15-17 Sts. and Baltimore St. to Broadway. $4,000,000.

N. Y., Brooklyn—BANK and STORE—East New York Savings Bank, 2644 Atlantic Ave., Zone 7, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, 1 story bank and store, 1155-59 Clarkson Ave. $625,000.

▲ N. Y., Kew Gardens—APARTMENTS—S. Feinberg, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, 3 six story apartments, Melbourne Ave., northwest corner of 149 St.; south side of Melbourne Ave., west of 149 St.; and on south side of Gravett Rd., west of 149 St. $1,000,000.

N. Y., New York—CLINIC, etc.—Amalgamated Laundry Workers Health Center, Inc., 150 Fifth Ave., Zone 11, plans by Lee Schoen, 19 E. 53 St., Zone 22, 2 story clinic, light storage and garage, 222-30 E. 34 St. $800,000.

N. C., Durham—HOSPITAL—Duke University, Durham, plans by Horace Braumbauer & Assoc., Land Title Bldg., Phila., Pa., 100-bed hospital addn. $500,000.

▲ **O., Cincinnati**—HOUSES—George W. Schaefer, 2010 Ferguson Rd., 200 one-family bsmnt., brick houses, Cheviot and Galbraith Rds. $3,000,000. Charles Bonfield, 4953 Shirley Pl., consult. engr.

▲ **O., Dayton**—HOUSING—Louis A. Supensky, 2454 Wayne Ave., 160 home proj. on 46 acre tract, Stroop Rd. and Wilmington Pike. $1,750,000.

▲ **O., Cincinnati**—SHOPPING CENTER—Brune-Harpenau Builders, Inc., 3075 Neisel Ave., plans by Raymond Loewy Assoc., 488 Madison Ave., New York, N. Y., shopping center, Werk Rd. and Glenway Ave. $5,000,000.

Okla., Enid — AUDITORIUM — Phillips University, Enid, plans by M. N. Wheeler, 1416 Broadway, auditorium. $500,000. CD 7/10/51.

Okla., Tulsa—SHOPPING CENTER—Tulsa Admiral Corp., Admiral and New Haven Aves., plans by Bramblett & Baldwin, Leonhardt Bldg., Oklahoma City, shopping center, Admiral Blvd. $500,000.

▲ **Pa., McKeesport**—SHOPPING CENTER—B. Thorpe Co., 954 Penn. Ave., Pittsburgh, plans by Brandon Smith, 900 Century Bldg., Pittsburgh, 1 and 2 story, brick, block, steel shopping center, North Versailles Twp., near here. $3,000,000.

Tex., Brownwood—DORMITORY—Howard Payne College, Brownwood, girls dormitory, $600,000.

▲ **Tex., Houston**—DWELLINGS—Garden Oaks Plaza Corp., 2230 Almans St., 28 brick, sledge stone, field stone dwellings, $385,000; 25 roman brick dwellings, 100 N. Shepherd Dr., $635,000.

▲ **Tex., Irving**—DWELLINGS—Mayflower Investment Co., Carl P. Collins, 912 Navarro St., Dallas, No. 1, 32 stone, brick dwellings, $325,000; No. 2, 45 brick veneer dwellings, $425,000; No. 3, 40 brick, stone type dwellings, $350,000 No. 4, 50 masonry type dwellings, $500,000; No. 5, 38 frame, masonry dwellings, $335,000; shopping center 30-acre site, $450,000, in new extension of Plymouth Park Addition.

Tex., Longview — COUNTRY CLUB — Pine Crest Country Club, Longview, plans by Wilson, Morris & Crain, Longview, Plan A, reconstruct country club, $350,000; Plant B, const. new country club, vicinity Gregg Co. airport. $590,000.

▲ **Va., Alexandria**—RESIDENCES—Magazine Bros., 1010 Vermont Ave. N. W., Wash., D. C., plans by Karl LeMar John, 7101 Orkney Parkway, Bethesda, Md., 360 one story bsmnt., brick, concrete masonry residences. $4,500,000.

Wash., Seattle—HOUSING UNITS—S. Long & F. R. McAbee 110 25 Ave. N., 27 frame duplex housing units. $500,000.

Wash., Toppenish—SHOPPING CENTER—C. F. Bolin & B. Maib, Grandview, plans by T. F. Hargis, Jr., Yakima 75,000 sq. ft. shopping center. $500,000.

Alaska, Ketchikan—HOTEL—J. R. Heckman & Co., Ketchikan, hotel. $533,000.

▲ **Alta., Calgary**—SHOPPING CENTER—Active Realty Co., Ltd., Calgary, plans by Stevenson & Dewar, 340 7 Ave. W., shopping center on 40-acre site N.E. of Trans-Canada Highway. $15,000,000.

▲ **Ont., Aldershot**—SHOPPING CENTER—John Cowan, Aldershot, shopping center on No. 2 Highway in Glen-acres Sub-division. $1,300,000.

▲ **Ont., Toronto**—RESIDENTIAL AREA—Don Mills Development Co. Ltd., E. P. Taylor, pres., Toronto, residential area to house 45,000 persons in North York to be called "Yorkton", incl. stores, churches, schools, roads, services, etc. $200,000,000.

INDUSTRIAL BUILDINGS

Ariz., Nogales—POWER PLANT, etc.—Citizens Utility Co., Nogales, electric power plant and distr. lines, $418,000.

Mich., Detroit—PLANT—Thompson Products, Inc., M. P. Graham, vice pres. and genl. mgr., 7881 Conant St., brick, steel, 50,000 sq. ft. plant, $500,000.

N. Y., Woodside—WAREHOUSE—Henry Kelly Import & Distributing Co., 413 W. 14 St., New York, Zone 14, plans by H. Hughes, c/o owner, 1 story, 161x212 ft. warehouse and office, Northern Blvd. west of Woodside Ave. $400,000.

▲ **N. D., Williston**—PLANT—Amerada Petroleum Corp. and Signal Oil Gas Co., Beacon Bldg., Tulsa, Okla., 150,000 g.p.d. natural gasoline plant. $15,000,000. E. H. McCullough, c/o owner, engr. CD 9/9.

Tex., Abilene—PLANT—Mead's Bakery, 910 Butternut St., 1 story, 200x283 ft., masonry bakery plant, concrete pier and beam fdn. $500,000. Tucker & Lindberg, 155 Cedar St., consult. engrs.

▲ **Tex., Abilene**—POWER PLANT—West Texas Utility Co., Abilene, power plant, power lines, gas lines $3,945,370. CD 9/25/51.

▲ **Tex., Athens**—PLANT—Olive & Myers Furniture Mfg. Co., c/o Horace D. Spalti, 2220 Young St., plans by George L. Dahl, 2101 N. St. Paul St., Dallas, 1 story, 225,000 sq. ft. masonry furniture mfg. plant. $1,125,000.

▲ **Tex., Houston**—PLANT—General Bronze Corp., Stewart Ave., Garden City, N. Y., aluminum products plant, 10-acre site Mykawa Rd., ½ mi. beyond Long Dr. $1,000,000. CD 2/25.

▲ **Tex., Houston**—PLANT—Pacific Valves, Inc., c/o Chester Steinberger, vice pres. and genl. mgr., Sterling Bldg., valve mfg. plant, 12 St. $1,000,000.

▲ **Tex., Pettus**—REFINERY IMPRVS. etc.—Danaho Refining Co., Pettus, refinery imprvs., $260,800; refinery, $2,410,000.

Tex., Port Neches—STORAGE—Jefferson Chemical Co., Port Neches, storage facilities. $573,000.

▲ **Wis., Milwaukee**—BUS TERMINAL—Greyhound Bus Line, 231 W. Michigan St., Zone 3, bus terminal. $1,000,000.

Man., Winnipeg—PLANT—Imperial Oil, Ltd., 56 Church St., Toronto, Ont., catalytic polymerization plant. $750,000.

N. S. Halifax—MACHINE SHOP—Halifax Shipyards Ltd. Halifax, machine shop. $500,000.

▲ **Ont., Scarborough**—LABORATORY — Underwriters Laboratories of Canada, Crouse Rd., testing laboratory, Crouse Rd., east C.P.R. spur, $500,000.

Ont., Toronto—WAREHOUSE, etc.—R.C.A. Victor Co. Ltd., 1140 Yonge St., warehouse and offices for Toronto district, $500,000.

UNCLASSIFIED

Georgia—RURAL DISTRIBUTION LINES—Mitchell County Electric Membership Corp., Camilla, 81 mi. rural distr. lines and sys. imprvs., Mitchell Co. $550,000.

▲ **Ill., Chicago**—TELEVISION STATIONS—City, City Hall, plans by Louis Gerding, state archt., Armory Bldg., Springfield, building and equipping television stations. $1,000,000.

▲ **Ill., Urbana**—TELEVISION STATIONS—State, State Capitol, Springfield, plans by Ernest Stoeffer, superv. archt., University of Illinois, Administration Bldg., building and equipping television stations for educational purposes, University of Illinois. $1,000,000.

▲† **La., New Orleans**—BARGE LOADING FACILITIES, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., plans by Bedell & Nelson, engrs.-archts., 840 Union St., New Orleans, barge loading facilities, $2,300,000; harbor craft anchorage facilities, $1,250,000; hardstands, $650,000; retaining wall, $800,000, New Orleans Army Base.

▲ **Okla., Tahlequah**—GAS DISTRIBUTION, etc.—City bond election Apr. 7, natural gas distr. and transmission line, $1,200,000. L. S. Martenson, Tahlequah, engr. CD 10/27.

Texas—RURAL DISTRIBUTION LINES—Pedernales Electric Co-operative, San Marcos., exten. REA lines and sys. imprvs., Hays Co. $768,000. CD 12/17/48.

Man., St. Boniface—HOCKEY ARENA—Municipality plans by N. M. Zunic, Norwood, rein.-con. hockey arena, Enfield Crescent, $900,000. J. A. Bilbeau, City Hall, city engr.

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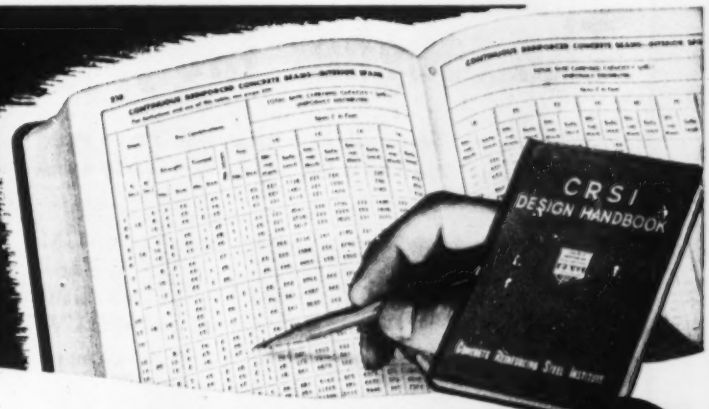

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ Mass., Boston—PARKING FACILITIES—B.A. 5/11—City, Real Estate Comn., City Hall Annex, leasing public parking facilities Copley Square, St. James Ave., Providence St., Berkeley and Clarendon Sts., term of 40 years annual rental not less $45,000, $1,250,000. Plans deposit $100, refundable. Extended date. Thomas Worcester, Inc., 85 State St., Boston, engr. and archt. CD 3/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ J. F. Fitzgerald Constr. Co., 212 Essex St., Boston, Mass. LB Est. $2,500,000. redevelopment of HYDRO-ELECTRIC FACILITIES, RUMFORD, ME. Rumford Falls Power Co., Philip Thomas, ch. engr., Rumford, Me. Bids Mar. 3. CD 2/25.

▲ Thomas O'Connor & Co., Inc., 238 Main St., Cambridge, Mass. CA Est. $1,250,000. PLANT addn., Damon St., Hyde Park, BOSTON, MASS. Westinghouse Electric Corp., Constr. Div., 401 Liberty Ave., Pittsburgh, Pa. Bids Feb. 27. CD 2/24.

▲ Joseph Rugo, Inc., 581 Boylston St., Boston, Mass. LB $1,298,288. HOUSING Proj. Mass 200-3, Central Ave., CHELSEA, MASS. Chelsea Housing Auth., City Hall, Chelsea, Mass. Bids Mar. 18. CD 2/20.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES

April 7 Maryland — April 9 New Jersey
April 16 New York

STREETS AND ROADS

April 7 Maryland — April 9 New Jersey
April 16 New York — April 22 Delaware

BIDS ASKED—BUILDINGS

▲ Md., Annapolis—SCHOOL—B.A. 4/9—Anne Arundel Co. Bd. Educ., 207 Hanover St., Brooklyn Park Junior Senior High School, Brooklyn Park. $3,000,000. Extended date. Harder & Dressell, Glen Burnie, archts. CD 3/16.

▲ N. J., Newton—SCHOOL—B.A. 4/16—Bd. Educ., Newton, high school. $1,250,000. CD 5/2/46.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—State Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,
Johnson, Drake & Paper, Inc., 86 Trinity Pl., New York, N. Y., CA. $3,137,343, est. $4,050,000, grading, paving, drainage facilities 7.68 mi. sect. of New York State Thruway, north of Mill Grove and Crittenden between Rtes. 5 and 33, Erie Co.; CA $8,247,119, est. $9,234,000, grading, paving, drainage faciliteis 12.7 mi. sect. New York State Thruway from point west of Port Gibson Rd. at Manchester Center easterly to the north of Clifton Springs and Phelps to Seneca-Ontario Co. line, Ontario Co.;
Rusciano & Son Corp., 728 E. 212 St., New York, N. Y., CA $1,731,176, est. $1,785,000, traffic interchange facilities on Major Deegan Expressway at Grand Concourse, New York City, Bronx Co.;
Dale Eng. Co., 404 Court St., Utica, N. Y., CA $896,610 est. $978,000, b. conc. 2.43 mi. Black River Blvd. Arterial Rte. in Rome and for installation traffic signal sys. along the route, Oneida Co. Grand total $14,012,248. Bids Jan. 29. CD 2/2, under LB.

▲ NEW YORK—State Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,
Savin Constr. Corp., 10 Village St., East Hartford, Conn., CA. $4,536,190, est. $6,075,000, grading, paving, drainage facilities 5.63 mi. Limestreet to Rte. 9W, New York State Thruway, Greene Co., CA $7,068,347, est. $8,344,000, grading, paving, drainage facilities, 3.94 mi. Rt. 23A, Catskill Creek, New York State Thruway, Greene Co.;
Slattery Contg. Co., Inc., 46-35 54 Rd., Long Island City, N. Y. CA. $2,263,400, est. $2,742,000, grading, paving, drainage facilities, utilities, retaining walls, 0.66 mi. Major Deegan Expressway, Bronx Co.;
Lizza & Sons, Inc., 21 Orchard St., Oyster Bay, N. Y., CA. $736,449, est. $874,000, wid'n., b. conc. resurf. 2.53 mi. Hillside Ave. (Rte. 25B) from New York City line easterly to Herricks Rd., Town of North Hempstead, Nassau Co.;
D V. Frione & Co., Inc., 87 Foxon St., New Haven, Conn. CA $4,973,081, est. $5,825,000, grading, paving drainage facilities 7.62 mi. sect. Thruway from Western Ave. (Rte. 20) in McKownville, west of Albany, northwesterly across Rte. 146 to Albany-Schenectady Co. line, concrete, b. conc. or grav. 6.24 mi. various intersecting and access roads, 2 traffic interchanges and building 6 bridges to carry traffic over Thruway, bridges at Rapp, Karer, Old State Rds., Rte. 146, Washington Ave. Interchange and the Schenectady Spur Interchange, Mohawk Sect., State Thruway, Albany and Schenectady Counties;
B. Perini & Sons, Inc., 73 Montwait Ave. Framingham, Mass., CA. $10,972,514, est. $12,252,000, grading, paving, drainage facilities 13.34 mi. sect. Thruway from approx. 1½ mi. west of Randall through Fultonville, north of Auriesville and over Schoharie Creek to point southeast of Ft. Hunter and west of County Rte. 44, incl. constr. 4.65 mi. access roads, relocation of portion of New York Central's West Shore R. R. tracks, constr. of traffic interchange facilities at Fultonville and building 8 bridges at various points along the route, Montgomery Co.;
D. W. Winkelman Co., Inc., Hefferman Bldg., Syracuse, N. Y., CA. $996,874, est. $1,017,000, construct 2 traffic interchanges Rts. 48 and 57, New York State Thruway, Onandaga Co. Grand total $31,546,855. Bids Feb. 11. CD 2/16, under LB.

▲ NEW JERSEY—N. J. Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
Union Building & Constr. Corp., 630 Main Ave., Passaic, N. J. LB, $1,191,965, bridges at Bordentown Turnpike Ernston Rd., Laurence Harbor Rd., Cliffwood Ave., Main St., Matawan Relocation and culverts at Mohingson Brook and at Crossway Creek other related work, Garden State Parkway, Contract No. 35, Section 7, Borough of Sayreville Twps. of Madison and Matawan, Middlesex and Monmouth Counties. Bids Mar. 19. CD 3/2.

▲ NEW JERSEY—N. J. Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
Union Building & Constr. Corp., 631 Main Ave., Passaic, N. J., LB, $3,961,490, grading, draining, paving Garden State Parkway from Keyport-Matawan Rd. in Matawan Twp., Monmouth Co. to Chevalier Ave. in Borough of Sayreville, Contract No. 7, Section No. 7, Middlesex and Monmouth Counties. Bids Mar. 19. CD 3/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ George F. Driscoll Co. & Moccia Constr. Co., 41 E. 42 St., New York, N. Y., CA. $8,777,778, foundation and general constr.;
Harry Starkman & Bros., 348 Brooklyn Ave., New York, N.Y., CA $1,008,000, heating and ventilating;
Herman H. Schwartz, Inc., 179 S. Portland Ave., Brooklyn, N. Y., CA. $526,470, electrical work;
J. L. Murphy, Inc., 370 Jay St., Brooklyn, N. Y., CA $1,014,000, plumbing, for Cypress Hills HOUSES, Proj. NYC 58-2, Sutter, Euclid, Blade Aves., Chestnut St., Dumont, Euclid Aves., Linden Blvd., and Fountain Ave., BROOKLYN, N. Y., New York City Housing Auth., 63 Park Row, New York 38, N. Y. Grand total $11,326,248. Bids Feb. 3, awarded Feb. 13. CD 2/5, under LB.

▲ Cauldwell Wingate Co., 101 Park Ave., New York 17, N. Y., CA. $7,112,000, general contract;
Jesse E. Kahn, Inc., 242 W. 20 St., New York 11, N.Y. CA. $759,280, sanitary contract;
Herman H. Schwartz, Inc., 179 S. Portland Ave., Brooklyn 17, N.Y., CA. $1,049,740, electrical contract for BASIC SCIENCES bldg., State University Medical Center, Kings Co., BROOKLYN, N. Y. Bureau Contracts & Accounts, Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Grand total, $8,921,020. Bids Feb. 26. CD 3/4, under LB.

▲ Paul Tishman Co., 21 E. 70 St., New York 21, N. Y., CA. $4,288,890, general constr.;
Jesse E. Kahn, 131 W. 21 St., New York 11, N. Y., CA $501,995, plumbing for Van Dyke HOUSES, Sect. II, Proj. No. NY 5-13, incl. Bldgs. 14 to 22 (inclusive) in area bounded generally by Blake Ave., Powell St., Dumont Ave. and Christopher St. and by Dumont Ave., Powell St., Livonia and Stone Aves., BROOKLYN, N. Y. New York City Housing Auth., 63 Park Row, New York 7, N. Y. Bids Dec. 30, awarded Feb. 24. CD 1/27, under LB.

▲ David Minkin, 186 Joralemon St., Brooklyn 2, N. Y. Owner Builds. $2,000,000. Greater Pomonok SHOPPING CENTER, 6-acre tract, Kissena Blvd. between 71 and Aguilar Aves., FLUSHING, N. Y. Martyn N. Weston, 44 Court St., Brooklyn 2, N. Y., archt. Blitman & Tischler, 101 Park Ave., New York 17, N. Y., engrs.

▲ Deer Haven-At-Huntington Homes, c/o Schulman & Soloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y., Owner Builds, $3,000,000, 224 HOUSES on 55-acre site at New York Ave. and 22 St., HUNTINGTON, N. Y.

▲ Paul Tishman Co., Inc., 21 E. 70 St., New York 21, N. Y., CA. $4,087,890, general constr. Carver HOUSES, Proj. No. NYS 56, Sect. I, incl. Bldgs. Nos. 1 to 6 (inclusive) in area bounded generally by E. 202 St., Park Ave., E. 99 St. and Madison Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 7, N. Y. Bids Feb. 25, awarded Mar. 17. CD 2/27, under LB.

▲ Cranesbridge Land Co., c/o Henry H. Moger, Jr., archt., 250 Main St., White Plains, N. Y. Owner Builds, $1,600,000, 60 HOUSES on tract at North Broadway, NORTH TARRYTOWN, N. Y.

▲ Morewood Oaks Homes, c/o William P. La Vallee, archt., 164-09 Hillside Ave., Jamaica, N. Y. Owner Builds, $1,400,000. 65 HOUSES on 25-acre tract at Ravine Dr. and Old Sands Point Road, PORT WASHINGTON, N. Y.

▲ Syosset Ranch Estates, c/o A. H. Salkowitz, archt., 37-60, 82 St. Jackson Heights, N. Y., Owner Builds, $2,800,000, 200 HOUSES, tract on Cold Spring Road, SYOSSET, N. Y.

▲ Newport Terrace Homes, c/o John W. Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds, $1,250,000, 80 HOUSES on 18-acre tract at Murray St. and 24 Road, WHITESTONE, N. Y.

▲ McCloskey & Co., 1620 W. Thompson St., Phila., Pa., CA, $1,459,500, general contract Senior High SCHOOL, and site imprvs., ERDENHEIN (Phila., P.O.), PA. Springfield Twp. School District of Montgomery Co., High School Bldg., Erdenhein, Pa. Bids Feb. 17. CD 3/13, under LB.

▲ William D. Baker Co., 1717 Sansom St., Phila., Pa., CA, Est. $1,700,000, drive in BANK and OFFICE, present bank and office alterations, PHILA., PA. First National Bank, 315 Chestnut St., Phila., Pa. Bids Jan. 15. Moody & Hutchinson, 1420 Walnut St., Phila., Pa., and Frank N. Kneas, 504 Woodland Terrace, Phila., Pa., engrs. CD 1/5.

▲† Bonwit Constr. Co., 100 Gold St., New York, N. Y. LB $1,143,500. LABORATORY, sewers, steam distr. sys., paving, ENG. 18-020-53-44, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Contract rescinded because of errors. (Correction-status) CD 2/10, under CA.

▲ Simon Constr. Co., 817 Penna. Ave. N.W., Wash., D. C. Own Forces. $2,250,000. 200 APARTMENT units, WHEATON, MD. Ted Englehardt, 919 Pershing Dr., Silver Spring, Md., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES

April 10 Kentucky — April 15 Louisiana

STREETS AND ROADS

April 10 Kentucky — April 15 Louisiana

BIDS ASKED—BUILDINGS

▲ Fla., Jacksonville—HOSPITAL—B.A. 4/18—Baptist Hospital Assn. of Jacksonville, 1100 San Marco Blvd., Zone 7, Sect. 1, 5 story, rein.-con. hospital. $1,800,000. Total est. $2,750,000. Plans deposit $75. Reynolds, Smith & Hill, 227 Park St., Zone 4, engrs. and archts. CD 5/6/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ VIRGINIA—State Hy. Dpt., 1221 E. Broad St., Richmond,
W. W. McIntosh, Inc., Mill Rd., Richmond, Va., LB $1,116,731, Richmond, Fredericksburg, Suffolk and Culpeper Dists.;
Adams Constr. Co., 272 S Roanoke Ave., Norwich, Roanoke, Va., LB $709,558, Bristol, Salem and Suffolk Districts;
A. B. Torrence & Co., Elkton, Va., LB $164,965, Richmond and Staunton Districts;
Powell & Bolling, Sandston, Va., LB $151,530, Culpeper District;
J. R. Ford Co., Lynchburg, Va., LB $261,832, Lynchburg District;
Echols Bros., Staunton, Va., LB $199,706, Staunton District;
Burton P. Short & Co., Petersburg, Va., LB $184,355, Suffolk District;
Virginia Asphalt Paving Co., Inc., 437 McClanahan St., Roanoke, Va., LB $141,349, Salem District;
Thompson-Arthur Paving Co., Danville, Va., LB $98,423, Lynchburg District, foregoing for furnishing 2,816,687 gal. bit. material, Class B and 154,087 tons aggregate, furnishing and application of bit. material and the application of state owned covering material; 6,984,529 gal. bit. material, Class "C" and 353,548 tons aggregate, furnishing and application of bit. material and the furnishing and application of the covering material. Bids Mar. 19. CD 3/3.

▲† T. L. James & Co., Inc., Box 531, Ruston, La., and W. R. Aldrich & Co., 2493 Baywood Ave., Baton Rouge La. jointly LB $2,253,799. addnl. aprons, taxiways and apron grid duct sys., Lake Charles Air Force Base, Eng. 53-104, LAKE CHARLES, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Mar. 20. CD 1/28.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Batson-Cook Co., West Point, Ga., LB, $2,526,000 central repair SHOPS, Marine Corps Depot, Spec. 35231, ALBANY, GA. Dpt. Navy, Officer in Charge of Construction, Box 465, Naval Base, S. C. Bids Mar. 19. CD 2/3.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS

April 14 Wisconsin

BIDS ASKED—BUILDINGS

▲ Mich. Ecorse—SCHOOL—B.A. 4/13—Ecorse Public Schools, R. Montie, secy, Bd. Educ., 4165 7 St., 2 story, bsmnt., brick, steel, concrete high school, $1,650,000. Plans deposit $50, refundable, Bennett & Straight, 15624 Michigan Ave., Dearborn, archt. C. L. Toonder, 15624 Michigan Ave., Dearborn, engr. Bids 11/24 rejected. CD 11/12/52.

▲ Wis., Milwaukee—AUDITORIUM, etc.—B.A. 4/14—Mt. Mary College, 2900 N. Memomonee River Parkway, 3 story, bsmnt., 170x260 ft. auditorium, sisters dormitory. $1,000,000. Plans deposit $50. Wm. G. Herbst & Assocs., 1249 N. Franklin Pl., Milwaukee, Zone 2, archts. CD 10/10.

▲ O., Cincinnati—ARMORY, etc.—B.A. 4/15—University of Cincinnati, Clifton Ave., 2 story, 162x242 ft., armory, fieldhouse, University Ave. $1,800,000. Plans deposit $50. James E. Allan, 914 Main St., and Potter, Tyler, Martin & Roth, 35 E. 7th St., archts. CD 11/1/48.

▲ Ind., Richmond—POWER PLANT—B.A. 4/20—Municipal Electric Lighting & Power Dpt., City Hall, 32 S. 8 St., power plant. $2,000,000. Plans deposit $25. CD 11/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Westinghouse Electric Corp.**, 207 W. 3 St., Cincinnati, O., CA. $3,780,000 electric motors for one of process facilities;

General Electric Corp., Portsmouth, O., CA. $408,745 electric motors;

C. H. Wheeler Co., 105 W. Adams St., Chicago, Ill., CA. $502,500, cooling towers;

Standard Asbestos Mfg. & Insulating Co., 410 N. Olive St., Kansas City, Mo., CA. $177,920, furnishing, installing wall siding for process facility bldg.;

C. C. Sanitation Co., Vallejo, Calif., CA. $82,000 yearly furnishing and maintaining chemical sanitary facilities for three years at ATOMIC PLANT, (Subcontractors under Peter Kiewit Sons' Co., P.O. Box 268, Porthmouth, O.), for Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., 25, D. C., PIKETON AND WAKEFIELD, O. CD 8/13/52, under CA.

▲ **Spence Brothers**, 417 McCoskry St., Saginaw, Mich. CA Est. $1,000,000. Caro State Hospital Bldgs., BAKERY addn., MEAT SHOP, STORES, PAINT SHOP, fire truck stall, incl. refrigeration and cork work, CARO, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Feb. 18. CD 1/8.

▲ **Perron Constr. Co.**, 6525 Lincoln St., Detroit, Mich. CA. general contract;

Hall Engineering Co., 8888 Baltimore, St., Detroit, Mich. CA. electrical power and lighting for 1 story, brick, steel ginger ale bottling PLANT alterations to old CONVENTION HALL, incl. 5,000 volt primary station and transformer bank, Woodward Ave., DETROIT, MICH. James Vernor Co., 239 Woodward St., Detroit, Mich. Total est. cost $5,000,000, Bids Feb. 23. CD 2/11.

▲ **Harry E. Wolfe, Inc.**, Farmington, Mich. CA. Est. $1,620,000. brick, ranch HOUSES subdivision on 96 acres, Orchard Lake Rd., FARMINGTON, MICH. Harry S. Wolfe (agent), Interzone, Farmington, Mich.

▲ **Reniger Constr. Co.**, 127 N. Cedar St., Lansing, Mich. LB $3,274,735. general contract;

Lansing Electric Motors Co., 1905 S. Washington St., Lansing, Mich. LB $421,637. electrical contract;

Hickey Shaw & Winkler, Inc., 14855 Ward St., Detroit, Mich. LB $617,241. mechanical contract for CIVIC OFFICE and AUDITORIUM, Veterans Memorial, LANSING, MICH. City, Mayor Ralph W. Crego, City Hall, Lansing, Mich. Bids Mar. 16. CD 1/6.

▲ **Burt Homes, Inc.**, 4055 Joy St., Detroit, Mich. Owner Builds. $1,200,000. 110 brick HOUSES, Huntington Estates, Ten Mile Rd., Colgate and Roanoke Sts., PLEASANT RIDGE (BR. ROYAL OAK), MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES

April 7 Iowa — April 10 North Dakota
April 14, 15 Texas — April 28 Montana

STREETS AND ROADS

April 7 Iowa — April 10 Nebraska, North Dakota
April 14, 15 Texas — April 28 Montana

▲ **Colo., Brighton**—B.A. 4/10—South Adams County Water & Sanitation District, Derby, water distr. sys. $1,500,600. Ripple & Howe, 853 23 St. Denver, engr. and archts. CD 1/14.

▲ **Texas and Louisiana**—CRUDE OIL LINE—Bids Asked—Humble Oil & Refining Co., Humble Bldg., Houston, Tex., 55 mi. 18 in. welded joint crude oil line Longview East to Louisiana State Line, $1,500,000. CD 2/3.

BIDS ASKED—BUILDINGS

▲ **Colo., Boulder**—DORMITORY—B.A. 4/14—University of Colorado, Campus, Boulder, 2 and 3 story Dormitory No. 4, $1,000,000. Trautwein & Howard, 1411 Walnut St., Phila., Pa., engrs. Peterson & Lindstedt, 624 W. 14 Ave., Denver, archts. CD 11/28.

▲ **Tex., Houston**—PLANT—Bids Asked—General Bronze Corp., Stewart Ave., Garden City, N. Y., aluminum products plant. $1,000,000. CD 3/18.

▲ **Tex., Houston**—BANK and OFFICE—Bids Asked—South Texas National Bank, 213 Main St., 21 story, bsmnt., sub-bsmnt. 400,000 sq. ft. structural steel frame, granite, brick, terra cotta bank and office. $4,500,000. Kenneth Franzheim, 2402 Crawford St., archt. Howard, Johnson & Kelley, Scanlan Bldg., engrs. CD 11/24.

▲ **Tex., Texas City**—REFINERY—Bids Asked—Pan American Refining Corp., Texas City, refinery, catalytic reforming, etc. to imprv. quality of gasoline and to increase aviation gasoline production. $7,625,000. CD 11/23/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MISSOURI**—State Hy. Comn., Jefferson City,

W. J. Menefee Constr. Co., Sedalia, Mo. CA. $544,949. c. conc. 4.632 mi., Crawford Co. CD 3/6, under LB.;

J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Mo. CA. $502,601. base wid'n., c. conc. 1.18 mi., Jackson Co. CD 3/6, under LB.;

Samuel Kraus Co., 649 Edmund Ave., St. Louis, Mo. CA. $1,099,726. c. conc. 0.319 mi. City of St. Louis. CD 3/6, under LB.;

M. E. Gillioz, Monett, Mo. CA. $142,813. 24 ft. c. conc. 0.924 mi., Jasper Co. CD 3/6, under LB;

Payne & Dolan, Inc., 38 S. Dearborn St., Chicago, Ill. CA. $133,664. 24 ft. b. conc. 2.121 mi., Pemiscot Co.;

O'Dell & Riney Constr. Co., 310 S. Fillmore St., Kirkwood, Mo. CA. $105,301. 24 ft. b. conc. 2.487 mi. Pemiscot Co. CD 2/13. Grand total, $2,529,054. Bids Feb. 27, awarded Mar. 20.

▲† **Peter Kiewit Sons' Co.**, Airport P.O., Wichita 17, Kan. CA $1,731,298 est. $1,778,528. aprons, Smoky Hill Air Force Base, Eng. 23-028-53-86, SALINA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids Mar. 5, awarded Mar. 21. CD 3/20, under LB.

▲† **Fred R. Comb Constr. Co.**, 2901 Aldrich Ave., Minneapolis, Minn. CA $1,196,630, est. $1,103,549. 3 wing hangars, Smoky Hill Air Force Base, Eng. 23-028-53-89, SALINA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Mar. 13, awarded Mar. 21. CD 3/19, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Austin Road Co., P.O. Box 1590, Dallas, Tex., LB. $160,624, grading, structures, M. K. T. R.R. overpass and concrete pavement 1.322 mi. Proj. 581-1-15 and 16, F-1089 (7) and FG-1089 (8), Dallas Co.;

Brown & Root, Inc., P.O. Box 3, Houston, Tex., LB. $353,851, flexible base, hot mix b. conc. 20.228 mi. Hy. U.S. 90, Proj. C 271-3, 4 and 5-9, 11 and 15, Austin, Waller and Fort Bend Counties;

Joe Davidson, P.O. Box 439, Terrell, Tex., LB. $117,429, grading, structures, base, surf. 5.693 mi. Hy. FM 1903 Proj. V 1496-2-1 and R1496-2-2, Hunt Co.;

J. R. Fanning, P.O. Box 1047, Lubbock, Tex., LB. $172,443, flexible base, two course surf. tr. 12.865 mi. Hy. SH 16, Proj. C 288-3-4, Eastland Co.;

E. W. Hable & Sons, Corsicana, Tex., LB. $159,676. grading, structures, base, surf. 7.128 mi. Hy. FM 636, Proj. 574-2-6 and R 574-2-7, S 570 (5), Navarro Co.;

Fred Hall & Son, Valley Mills, Tex., LB. $259,924, flexible base, two course surf. tr. 8.835 mi. Hy. SH 70, Proj. S 1212 (6), Ochiltree and Roberts Counties;

Kerr & Middleton, 2206 Clovis Rd., Lubbock, Tex., LB. $89,983, flexible base, three course surf. tr. 2.288 mi. Hys. U.S. 70, SH 207 and FM 784, Proj. C-145-78, C 453-8-5 and C 112-8-12, Floyd Co.;

M. B. Killian, 250 Mary Louis Dr., San Antonio, Tex., LB. $124,985, flexible base, two course surf. tr. 8.07 mi. Hy. SH 29, Proj. C 150-2-7, Llano Co.;

McKown & Sons, P.O. Box 785, Austin, Tex., LB. $704,982, flexible base, surf. tr. and hot mix b. conc. 8.336 mi. Hy. U.S. 81, Proj. C 15-13-10, FI 200 (14), Travis Co.;

Public Constr. Co., P.O. Box 380, Denton, Tex., LB. $125,721, b. conc. 25.208 mi. Hy. SH 19 and 31, Proj C 108-3-8 and C 163-3 and 4-12-9, Henderson Co.;

F. M. Reeves & Sons of Austin, P. O. Box 972, Austin, Tex. LB $1,325,801, grading, storm sewers, flexible base, asphalt surf., conc. pavement, bridges 0.836 mi. Hy. U. S. 59, Proj. U 514 (12), Harris Co.;

Henry Stafford, P. O. Box 1047, Lubbock, Tex., LB $159,813, grading, structures, base, surf. 16.543 mi. Hy. FM 871, 872 and 1219, Proj. S 1583 (1), Ward Co.;

C. Hunter Strain, P. O. Box 1057, San Angelo, Tex., LB $85,762, b. conc. 14.409 mi. Hy. U. S. 83, Proj. C 32-6-6, King Co.;

Sunset Constr. Co., P. O. Box 1981, San Antonio, Tex., LB $108,064, grading, structures, base, surf. 10.234 mi. Hy. FM 1961, Proj. R 1843-1-1, Goliad Co.;

Wendel Constr. Co., P. O. Box 231, El Campo, Tex., LB $112,384, grading, structures, base, etc. 4.66 mi. Hy. FM 647, Proj. S. 1682 (1), Wharton Co. Bids Mar. 17. CD 2/25. 3/4, 3/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Olson Constr. Co.**, 410 S. 7 St., Lincoln, Neb., LB, $1,267,534, general contract, men's DORMITORIES, LINCOLN, NEB. University of Nebraska, Bd. Regents, Lincoln, Neb. Bids Mar. 17. CD 3/10.

▲ **Beck-Utah**, First National Bank Bldg., Dallas, Tex. CA Est. $1,000,000. Town House Family APARTMENT HOTEL, Seventh and Harrison Sts., TOPEKA, KAN. Henry C. Beck, Rte. 1, Topeka, Kan. Lawrence Wells, Emporia, Kan., archt. CD 3/12, under CA.

▲ **Chapman Constr. Co.**, Lawton, Okla., LB, $1,390,000. Senior High School, LAWTON, OKLA. Bd. Educ., Lawton, Okla. Bids Mar. 9. CD 2/17.

▲ **Southwest Constr. Corp.**, 5100 E. 17 St., Oklahoma City, Okla., CA, $1,580,000, Thomas A. Edison Junior High SCHOOL, TULSA, OKLA. Bd. Educ., Independent School Dist. 1 of Tulsa County, 410 S. Cincinnati St., Tulsa, Okla. Bids Mar. 2, awarded Mar. 19. CD 3/12, under LB.

▲ **Singleton, Musick Constr. Co.**, 514 Fillmore St., Amarillo, Tex. LB $1,340,990. 3 story, bsmnt., brick, masonry, steel EDUCATIONAL-Revision existing EDUCATIONAL enlarging existing SANCTUARY, AMARILLO, TEX. First Baptist Church Congregation, Amarillo, Tex. Bids Mar. 16. CD 2/26.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS

April 9 Nevada — April 15 California

▲† **Calif., Muroc**—BARRACKS, etc.—B.A. 4/24—U. S. Eng. 751 S. Figueroa St., Los Angeles, barracks, mess-administration bldg., Edwards Air Force Base, ENG-04-353-53-123. $1,170,000. Extended date. CD 3/3.

▲† **Washington**—B.A. 5/6—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, six 100,000 hp hydraulic turbines for Chief Joseph Dam, Inv. 53-60. $7,500,000. CD 12/4.

SOON LETS CONTRACT—BUILDINGS

▲ **Calif., Torrance**—OFFICE—Douglas Aircraft Co., 827 Lapham St., ElSegundo, soon lets contract rehabilitate office bldg. $1,000,000. Van Dyke & Barnes, 190 and Normandie Sts., engrs. CD 3/2

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Morrison-Knudsen Co., Inc. & R. A. Westbrook**, 411 W. 5 St., Los Angeles, Calif., CA, $2,368,478, apron and taxiway, Davis-Monthan Air Force Base Eng-04-353-53-113, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 17. CD 3/23, under LB.

▲ **NEVADA**—State Hy. Dpt., State Office Bldg., Carson City,

Dodge Constr. Inc. and Silver State Constr. Co., Fallon, Nev., CA, $1,268,295, constr. portion of primary hy. sys., 28.926 mi. between 9 mi. north of Wells and 38 mi. north of Wells, Elko Co. Bids Mar. 19. CD 3/4.

▲† **Robert E. McKee, General Contractor, Inc.**, 4700 San Fernando Rd. West, Los Angeles, Calif., LB $9,676,000, ammunition storage depot, Nellis Air Force Base, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. CD 12/10.

▲† **Trepte Constr. Co. & Gunther & Shirley**, 2001 Kittner Blvd., San Diego, Calif., LB, $1,083,000 80,000 sq. ft. B.O.Q. and mess, Naval Air Station, NOY 74057, Sec. 3092, MIRAMAR, CALIF. Dpt. Navy, San Diego, Calif. Bids Mar. 10. CD 3/2.

▲† **R. A. Westbrook, Morrison-Knudsen Co., Inc.**, and **Ford J. Twaits Co.**, 411 W. 5 St., Los Angeles, Calif. LB, $6,587,130, runway and airfield pavements Edwards Air Force Base, Eng-04-353-53-115, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 20. CD 2/25.

▲ **John Delphia**, P. O. Box 313, Patterson, Calif., CA $1,439,530, Big Carson Dam, Lagunitas Creek below Alpine Dam, SAN RAFAEL, CALIF. Marin Municipal Water Dist., 875 Fourth St., San Rafael, Calif. Bids Mar. 10, awarded Mar. 19. CD 3/20, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Utah Constr. Co.**, 67 E. 4 St., S., Salt Lake City, Utah, CA, $4,583,028, first phase ground testing facilities, incl. assembly and maintenance area, administration bldgs., etc., ARCA IDAHO, Idaho Operations Office, Atomic Energy Comn., 550 2 St., Idaho Falls, Idaho. Bids Feb. 17, awarded Mar. 24. CD 2/24, under LB.

▲ **Haas & Haynie**, 275 Pine St., San Francisco, Calif., CA, $1,000,000. Parking GARAGE, W. First St. and Truckee River Lane, RENO, NEV. City, City Hall, Reno, Nev. John J. Gould, Financial Center Bldg., San Francisco, Calif., engr. Awarded Mar. 18.

▲ **Campus Homes, Inc.**, 4964 Los Santos Dr., Long Beach, Calif., Owner Builds, $2,000,000, 300 wood frame DWELLINGS, Abeyfield St. and Palo Verde Ave., LONG BEACH, CALIF.

▲ **Shaw Constr. Co.**, 8635½ Firestone Blvd., Downey, Calif., CA, $1,520,000, 181 frame, stucco DWELLINGS, Crewe, Spray, Arden, Brink nad Zens Sts., NORWALK, CALIF. A&C Shell 8635½ Firestone Blvd., Downey, Calif.

▲† **Swinerton & Walberg**, 225 Bush St., San Francisco, Calif., CA, $1,010,000 addnl. facilities at Riverbank ORDNANCE PLANT, RIVERBANK, CALIF. U. S. Eng., 180 N. Montgomery St., San Francisco, Calif. Awarded Mar. 19.

▲† **M. H. Golden Constr. Co.**, 3485 Knoll St., San Diego, Calif., LB, $2,114,000 addnl training facilities (secc.id increment), Naval Training Center, NOY 74058, Spec. 35093, SAN DIEGO, CALIF. P. Wks. Office Eleventh Naval Dist., San Diego, Calif. Bids Mar. 19. CD 3/2.

▲ **Hedberg Constr. Co.**, 8845 W. Olympic Blvd., Beverly Hills, Calif., Owner Builds, $1,160,000, 116 frame, stucco DWELLINGS in tract 16898, TORRANCE, CALIF.

CANADA

BIDS ASKED—BUILDINGS

▲ **Man., Winnipeg**—WAREHOUSES—B.A. 4/14—Defence Constr. Ltd., 400 Kensington Bldg., No. 1 and No. 2, R.C.O.C. Warehouses, $1,000,000. Plans deposit $100. K. F. Hurst, c/o owner, engr. CD 9/30.

▲ **Que., Montreal**—PLANT, etc.—Bids Asked—Standard Paper Box Ltd., 6240 Park Ave., 1 story, 560x675 ft. plant and 3 story office section, rein.-con., steel, brick, blocks, Viau and Hochelaga Sts. $2,000,000. M. Lamarche, c/o owner, engr. CD 3/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Hydro-Electric Power Comn.** of Ontario, 602 University Ave., Toronto, Ont., Own Forces $2,000,000 rebuilding Hydro Plant, Chats Falls west of Ottawa, 40 mi. on Ottawa River, ONTARIO. CD 2/18/47, under Unclassified.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dawson & Hall Ltd.**, 775 Clark Dr., Vancouver, B. C., CA. $2,507,498, rein.-con. HOSPITAL, LETHBRIDGE, ALTA. Lethbridge Municipal Hospital, City Hall, Lethbridge, Alta. Bids Mar. 18, awarded Mar. 19. CD 2/9.

(Proposed Advertisements see pp. 90 to 94)

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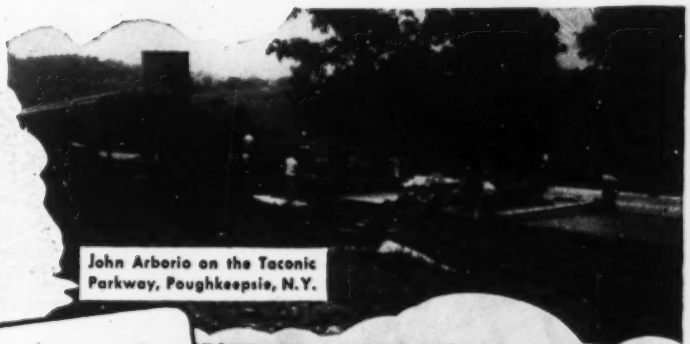

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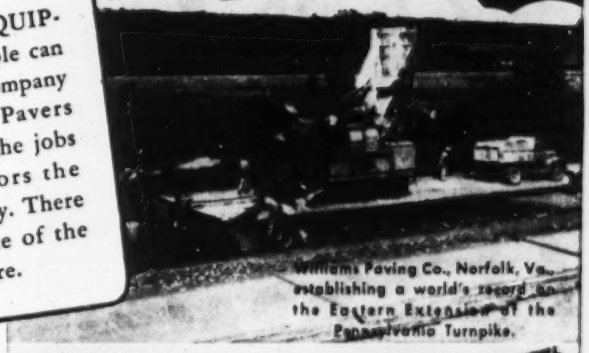

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UNIT PRICES

Kentucky Highway Contracts Executed During Calendar Year 1952
(by types, miles, and cost per mile)

Type	State Road Fund & Fed Aid (5¢ state & fed gas tax) Miles	Cost per Mile	Rural Secondary Funds (2¢ gas tax) Miles	Cost per Mile	Totals Miles	Cost per Mile
Grade & drain only	0 549	$29,983	5.090	$12,482	5 639	$14,186
Pulling ditches	183 328	247	.....	.....	183 328	247
Erosion control	35 303	4,940	.....	.....	35 303	4,940
Grade, drain, low type surfacing	235 235	27,269	469 094	14,345	704 329	18,662
Bit road mix & seal	421 472	7,355	113 872	6,823	535 344	7,242
Bit plant mix "F"	88 761	7,542	16 810	4,624	105 571	7,077
Bit concrete "I"	543 686	20,504	1.976	57,036	545 662	20,637
Rock asph surfacing	128 249	9,353	.....	.....	128 249	9,353
Bit penetration macadam	55 452	14,730	.....	.....	55 452	14,730
Cement conc pavement	0.174	252,071	.....	.....	0.174	252,071
Rock asph & A-2 seal	242.804	943	.....	.....	242.804	943

Kentucky highway costs

Cost per mile of Kentucky highways is reported here by class of construction. In addition, are selected average unit prices bid by the successful contractors, showing the trend of bidding over the past three years.

Average unit prices for successful bids

Item	Unit	All contracts 1950	1951	Other than RS* 1952	RS* 1952
Aggr, gravel, bank or crushed	ton	$1.00	$1.20	$1.16	$0.94
Aggr, gravel, river	ton	2.02	2.08	2.35	2.45
Aggr, cr limestone #9	ton	3.11	.....	3.92	3.82
Aggr, cr limestone base & insulation	ton	.....	3.15	3.11	3.22
bit road mix	ton	.....	3.50	3.62	4.15
#610 entrance	ton	.....	2.68	2.76	3.19
#610 roadway	ton	3.50	.....	2.67	2.53
Aggr, cr slag, #610 entrance	ton	.....	3.00	3.58	3.49
Asph cmt, PAC-5 prime	gal	0.14	0.17	0.17	.....
Asph cutback, MC-4 mix	gal	0.12	0.14	0.14	.....
Asphalt rock	ton	13.07	14.05	15.54	.....
Basin, remove catch	ea	44.20	90.95	37.36	.....
Bit coated aggr, binder cl F, type B	ton	7.06	7.90	6.54	5.34
Bit coated aggr surface, cl F, type B	ton	6.72	.....	7.40	5.14
Bit conc base, cl I	ton	6.11	6.59	7.01	.....
Bit conc binder, cl I type B	ton	5.58	6.64	6.59	7.00
Bit conc surf, cl I type B	ton	6.07	7.05	6.97	7.96
Bit mat, mix, not classified	gal	0.13	0.15	0.15	0.15
Bit mat, prime or tack not classified	gal	0.14	0.18	0.17	0.17
Bit mat, seal, not classified	gal	0.16	0.18	0.17	.....
Clear & grubbing	ac	76 67	109 25	86 27	.....
Clear & grubbing	mi	449 05	508 65	.....	556.74
Conc, cl A	cy	46.47	51 56	56 31	54 18
Conc, cl B	cy	43 40	45 92	49 88	51 39
Conc, cl D	cy	93 27	139 65	152 80	170.57
Curb, header	lf	1 26	1 43	1 89	.....
Curb, integral	lf	0 95	0 69	0 89	.....
Curb, remove conc	lf	0 17	0 74	0 56	.....
Curb & gutter, conc	lf	2 08	2 62	2 65	.....
Curb & gutter, rem	lf	0 70	1 02	0 61	.....
Ditching & shaping	mi	691 39	901 92	.....	635.21
Ditch, surf, 1 sf area	lf	0 06	0 15	0 08	.....
2 sf area	lf	0 11	0 27	0 11	.....
Exc, borrow	cy	0 48	0 58	0 55	.....
roadway	cy	0 49	0 55	0 53	0.40
Exc, struct, common	cy	4 23	5 21	6 40	6.00
solid rock	cy	9 32	10 15	12 09	11 25
unclassified	cy	3 53	4 18	3 94	.....
Exc, trench & shldr	cy	0 54	0 45	0 76	.....
Fertilizer, commercial, 6-8-6	ton	74 84	77 12	79 46	90 00
Final dressing	sta	17 27	17 35	16 06	10.82
Flume	lf	3 56	3 78	2 68	.....
Guardrail, remove	lf	0 50	0 60	0 52	.....
Gutter, conc valley	lf	3 83	2 20	2 00	.....
Headwalls, remove	ea	.....	12 37	8 82	6.78
Hedge, remove	lf	0 49	0 60	1 15	.....
Hedge reset	lf	0 74	0 81	2 15	.....
Honeysuckle hall's	ea	0 25	0 57	0 52	.....
Inlet, flume		178.91	232 74	195 36	.....
Limestone, agric	ton	6 53	7 00	6 49	8.00
Lumber, comm treated, structural	mbm	307 16	345 35	350 00	.....
Manholes	ea	174.03	256.75	295.21	.....
Manholes, adjust	ea	24 51	32 48	31 99	.....
Manholes, remove	ea	48 33	.....	36 00	10.00
Mary, rem dry stone	cy	.....	1 28	4 20	3.15
Mary, wet stone	cy	29 02	43 36	35 00	.....
Mary, rem wet stone	cy	4 68	4 30	5 54	5.00
Mary, rem concrete	cy	7 28	9 23	14 44	11.71
Monuments, project	ea	31 44	34 63	36 77	36.58
Overhaul	stay	0 02	0 01	0 03	.....
Pvmt, rem cmt conc	sy	0 73	1 77	1 50	.....
Piling, 14" conc, furn	lf	.....	4 70	5 96	5.39
14" conc, drive	lf	.....	5 23	5 57	5.61
10" (42#) stl, furn	lf	3 35	.....	4 86	5.22
10" (42#) stl, drive	lf	2 38	.....	4 69	4.85
12" (53#) stl, furn	lf	4 59	5 07	5 46	5.17
12" (53#) stl, drive	lf	4 45	5 07	5 00	5.09
tr timber, furnish	lf	1 97	1 92	1 44	2.00
tr timber, drive	lf	2 39	1 89	1 37	1.50
Pipe, 18", BCCM culv	lf	4 24	4 06	4 74	4.22
24" BCCM culvert	lf	6 24	5 84	6 57	5.86
Pipe, 30" BCCM culv	lf	7 70	7 71	.....	8 03
36"	lf	10 38	11 06	11 00	10.36
42"	lf	13 34	13 17	.....	12.84
48"	lf	15 08	16 25	.....	14.91
Pipe, 15" RC culvert	lf	2 62	3 06	3 13	.....
18"	lf	2 79	3 77	3 62	3.80
30"	lf	6 79	7 58	7 65	7.32
36"	lf	9 00	12 11	9 90	9.75
48"	lf	15 22	16 75	16 53	16.34
54"	lf	18 66	20 78	20 11	19.59
Pipe, 18" RC (X-at) culvert	lf	3 98	4 18	4 84	.....
24"	lf	5 39	5 93	5 00	.....
48"	lf	16 00	23 00	17 00	20.00
Pipe, 15" CM entr	lf	2 86	2 69	2 65	2.58
18"	lf	3 10	3 47	3 45	3.16
36"	lf	7 44	9 58	8 31	8.81
42"	lf	8 96	12 00	11 38	.....
Pipe, 15" RC entr	lf	2 65	2 84	.....	3.07
18"	lf	3 58	3 49	.....	3.69
24"	lf	4 87	5 09	5 14	4.87
Pipe, 6" PC sewer	lf	1 10	.....	2 19	1.70
Pipe, 6" VC sewer	lf	2 00	.....	3 00	6 00
Pipe, arch, 18" x 11" CM	lf	.....	4 50	5 00	4.50
22" x 13" CM	lf	.....	5 40	7 00	5.21
29" x 18" CM	lf	.....	7 28	7 50	7.34
36" x 22" CM	lf	7 00	7 97	11 00	8.63
58" x 36" CM	lf	24 00	18 40	17 79	16 06
65" x 40" CM	lf	27 00	20 15	20 00	22 17
72" x 44" CM	lf	27 27	26 11	28 12	26 03
77" x 57" CM, plate	lf	35 05	33 67	30 00	32.98
93" x 64" CM, plate	lf	34 70	35 54	30 28	35.08
107" x 72" CM, plate	lf	46 17	46 55	35 00	44 21
123" x 77" CM, plate	lf	53 49	47 89	.....	50 43
142" x 90" CM, plate	lf	55 00	60 00	.....	60 00
10' x 3' 11" CM	lf	.....	27 23	20.00	23 00
12' x 4' 1" CM	lf	.....	26 00	.....	26 31
13' x 15' 1" CM	lf	.....	38 00	.....	33 36
15' x 6', 1½" CM	lf	.....	35 00	.....	38 00
15' x 7' 5" CM	lf	.....	58 57	36.00	50 94
17' x 8' 5" CM	lf	.....	45 06	.....	54 00
Pipe, remove	lf	1 14	1 23	1 36	1 21
Pipe, relay	lf	1 36	1 41	1 18	1 30
Plates, bronze expan	lb	1 02	1 45	1 48	1.65
Plates, stl expan	lb	0 44	1 25	1 36	1.00
Rip rap	sy	4 00	4 00	6 00	.....
Scarifying & reshape	sy	0 10	0 12	0 16	.....
Seeding & protection	sy	0 09	0 10	0 09	0 08
Sidewalk, 4" conc	sy	3 28	3 84	3 98	5.93
Sdwlk rem conc (not classified)	sy	0 71	1 11	0 70	1 34
Slope protection	sy	4 51	5 96	5 92	6.19
Sod	sy	0 92	0 87	0 77	.....
Stl, reinforcement	lb	0 11	0 13	0 13	0.14
Steel, structural	lb	0 15	0 19	0 47	0.43
Steps, rem conc	sy	7 88	10 00	16 64	.....
Tar, refined (RT-2)	gal	0 18	0 22	0 23	0.23
Trees & stumps rem	ea	24 25	48 91	89 85	.....
Timber, creosoted	mbm	330 89	346 39	361 35	384.88
Water	Cgal	0 06	0 09	0 08	.....

* RS—rural secondary

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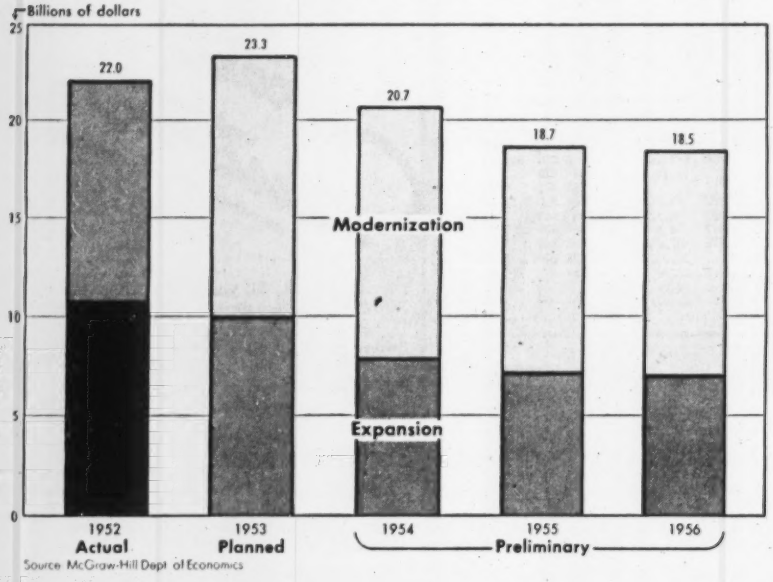

Source McGraw-Hill Dept of Economics

Capital spending by U.S. business should rise 6% in 1953, survey shows

McGraw-Hill study finds trend away from expansion, toward modernization of plants

U.S. businessmen plan to put more than $23.3 billion this year into capital expenditures. That's the conclusion of the sixth survey by McGraw-Hill Publishing Co. of business plans for new plants and equipment.

If these plans are carried through, capital spending will be up 6% from 1952 (chart). Preliminary plans for capital spending through 1956 show that it is scheduled at substantial levels, well above the pre-Korean volume of the years 1947 through 1950.

And during 1954-56 business is more likely to boost its present capital spending plans than it is to cut back. Even if a recession comes along, manufacturers say they would not cut capital expenditures more than one third below the level now planned for 1954 through 1956. On the other hand, manufacturers say they could spend half again as much in those years as they are planning now, if business proves good enough for them to take advantage of technological improvements.

• **Modernization**—The survey also shows that capital spending is beginning to swing away from expansion to modernization.

About 57% of the 1953 outlay is expected to go for replacement and modernization, rather than for new plant. During 1954-56, this ratio is expected to rise to about 62%. The trend shows up particularly in the steel, transport equipment, food, and textile industries.

The biggest percentage increases in 1953 plans for capital spending are in public utilities, mining, and airlines. Manufacturers expect to spend only about 1% more in 1953 than last year. Manufacturing industries that will boost capital spending most in 1953 are: automobile, electrical machinery, and transport equipment.

A breakdown of spending plans by product lines sheds some additional light on what individual industries plan to spend in 1953.

• **More spending in these lines**—Agricultural machinery, office and store machinery, paper, oil refining, shoes, furniture, and engines. In the food field, beverages, breweries, distilleries, and dairy producers plan to spend more.

• **Less spending in these lines**—Construction and mining machinery, general industrial machinery and some other machinery lines, paper, glass, nonferrous metals, food canning, and rayon chemicals.

Manufacturers expect to increase productive capacity by 7% this year, and another 9% by 1956. Leaders in plans for expansion from now to the end of 1956 are the electrical machinery, transport equipment, and chemical industries. Auto and machinery makers plan to expand faster than the average over this four-year period. The oil industry, which has been expanding rapidly for many years, plans to expand through 1956 at about the average rate for all manufacturing. The steel industry is slowing down its expansion rate.

• **Competition**—In some fields, there's going to be plenty of competition for markets. For on the average, manufacturing firms estimate that in their particular industry sales will grow about 10%, while they expect sales of their own individual companies to climb 13%. In other words, they plan to get a bigger share of the market. This shows up most in the building materials, cement, auto, machinery, and chemical industries.

Industries are going to spend plenty on new processes and new products. Here are samples:

• **Chemical companies** think coal hydrogenation (getting new chemicals from coal) may soon reach the stage where they will be building big new plants. More synthetic detergent plants, more processing plants for petrochemical derivatives, and vertical integration of chemical companies is being planned.

• **Lumbermen** plan to make more low-cost building panels from wood waste, and invest in electronic gluing equipment.

• **Oil refineries** will build new process plants to improve motor fuels.

• **Steel companies** will put up more plants to process taconite, a low-grade ore.

• **Auto makers** expect to build factories to turn out high-compression engines, and gas turbines for auto engines.

• **Plane makers** will be replacing piston engines with turbo-jet types.

• **Electronics manufacturers** will be building plants to turn out larger TV tubes, color TV, transistors, microwave units, and atomic energy power elements.

• **Machinery makers** plan to make larger forging presses, large injection

molding presses, and go further into powder metallurgy.

• **Textile manufacturers** say that drastic changes in spinning mills are coming within five years.

• **Not a forecast**—The McGraw-Hill figures are not a forecast of capital spending—for of course these plans are subject to alteration as economic conditions change—but the survey finds that there's more leeway for capital spending to go up than to go down. As of now, manufacturers have preliminary plans to spend about $9.3 billion a year from 1954 through 1956. Even if their sales drop sharply, they say they plan to spend a total of about $6 billion annually—off about a third. And if they believe business is good enough so that it would pay to take advantage of technical improvements, they would spend a maximum of $13.8 billion—up about one-half. The industries where the biggest opportunities for technological improvements exist are steel, machinery, food, chemicals, oil, and textiles.

Administration wants 35,000 housing units

Public housing will roll along at the present level through fiscal 1954, if Congress accepts the decision of the Eisenhower Administration.

Albert M. Cole, new administrator of the Housing and Home Finance Agency, last week asked the House Appropriations Committee to approve the starting of 35,000 public housing units in fiscal 1954. That is the same number of new starts that the last Congress stipulated for the current year.

The administration's stand on public housing has shown how Eisenhower lines up between the two opposing Republican points of view. New HHFA chief Cole has been in the past a strong opponent of public housing. On the other hand, Senator Taft has been the most influential advocate of public housing in Congress.

The administration's stand for 35,000 units clearly lines it up behind Taft. Chances are, however, that Congress this time, as it has in the past, will whittle the administration's request some.

The Truman budget in January requested 75,000 new starts. A year ago, Truman asked for that many too. HHFFA was lucky to get 35,000. The House last year cut the number to 5,000 and compromised with the Senate on 35,000.

With the administration asking for only 35,000 this time, Congress may approve no more than 25,000. The House will probably cut the request to 10,000 or so. It will be up to the Senate to get a compromise that comes somewhere near the administration figure.

• **No changes**—Cole's stand on public housing reinforced his previous statement that he will recommend no changes in housing policies or programs until he has made thorough studies and determined the facts. Meanwhile, he said, he will administer existing programs as set up by Congress.

His only instruction from the White House, Cole pointed out, is to examine the housing programs and then recommend more efficient methods of handling HHFA problems. He is not yet prepared to endorse any major changes.

Cole characterized the reduction in proposed new starts of low-rent public housing—from 75,000 to 35,000—as the most controversial change in the revised budget for HHFA.

During his four terms in the House, Cole was a consistent opponent of public housing. But last week he told the committee that the only fair and consistent thing to do is to continue the program at the present level until he has compteled his review of HHFA and can make further recommendations to Congress.

Building material prices inch up in several lines

Now that controls have been lifted, prices of building materials are inching higher—mostly in predicted lines. Increases have been announced lately on cement, sand, ready-mixed concrete, brick, lumber, gypsum products, wallboard, and plumbing supplies, as early reports on prices filtered in last week.

In the Lehigh Valley of Pennsylvania, where much of the nation's cement is made, mills posted price increases of 15 cents to 20 cents per bbl. Preliminary reports to ENGINEERING NEWS-RECORD show that, effective April 1, cement is up 15 cents in 11 cities, and up 20 cents in five others—Dallas, Detroit, Los Angeles, St. Louis, and San Francisco. On a percentage basis the 15 cent-increase works out around 4% to 5%. The 20 cent-boost means an increase of from 6% to 7% in Detroit, Los Angeles, San Francisco, and St. Louis. It's interesting to note, by the way, that in San Francisco some dealers had not raised prices as of last week, for competitive reasons.

These increases are about the same as the gain in ENR's 20-city average of

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cement prices during the seven months between the invasion of South Korea and the price freeze in January, 1951.

In sand and gravel, five more cities have reported increases of from 10 cents to 25 cents per ton. That makes seven out of 20 cities reporting increases in the last three months.

Ready-mixed concrete prices have gone up in five cities so far this year, of which four increased prices in March. In Cleveland the biggest increase, $1.50 per cu yd, brought the price to $15 per cu yd.

The price of brick is up in Kansas City by $1.25 per thousand to $27. And Illinois Brick Co., of Chicago, says it will boost prices from $23 to $26 per thousand on May 1.

More price increases in lumber showed up in March, but there still is no marked general tendency for rises. There have been some price cuts, too: fir 2x4s are up in four cities, down in two, while pine 2x4s are up in two cities, down in one. There's a big increase in New Orleans in fir 2x4s, up $17 per thousand ft, bm.

Several other producers of building materials have boosted prices. Price boosts from 3% to 7% have been announced by National Gypsum Co., U. S. Gypsum Co., and Certain-teed Products Corp. They cover plaster, plasterboard, wallboard, and other products. Typical boosts: plaster, $1 a ton; wallboard $1 per 1,000 sq ft; plasterboard 75 cents per 1,000 sq ft.

Hajoca Corp., of Philadelphia, has announced price increases on sink and wall cabinets. Dealers report boosts in nails, copper piping (up as much as 8%) and cast-iron soil pipe. And last week J. L. Hollaway, president of Crane Co., reported that prices of plumbing products will have to rise this year because of price boosts in copper and other materials.

RFC death to leave money gap

Agency to get out of business after 22 years—supplied heavy funds for construction since New Deal days

Congress and the Administration face the problem of finding an acceptable substitute for the Reconstruction Finance Corporation. The RFC is slated to die when its present authorization expires on June 30, 1954. But the federal government will hardly be in a position at that time to shut off automatically and completely the making of loans to private business groups and local governments.

Started under the Hoover Administration in 1932 to ease depression hardships by lending money to banks, insurance companies, farm credit agencies and railroads, the RFC blossomed into other fields under the New Deal.

RFC was authorized, for example, to make loans to business enterprise and to public agencies for financing public works. In the defense and war periods, the RFC was given one of its biggest assignments in carrying out huge national programs like that of the Defense Plants Corp.

• **Big construction factor**—All through the 21 years of its life, RFC has been an important factor in the financing of construction. After 1945, with loans going principally to private business, the RFC role in construction diminished. It picked up again in the last two years, with loans to defense plants made under the temporary authority of the Defense Production Act.

With that addition, the annual contribution still comes to a substantial amount, even though strictly RFC loans have been getting smaller each year. The recent record shows the trend. In fiscal 1950, $127 million of the $534-million total in 5,500 approved loans went for construction. In fiscal 1951, construction accounted for $84.5 million out of $285 million approved.

For fiscal year 1952, the RFC reported 284 loans totaling $323 million. Of that amount, about $187 million went to construction. And in the first six months of fiscal 1953 (ending Dec. 31, 1952), construction got $11.4 million out of $167 million in 531 RFC loans.

• **Money in DP loans**—Most of this construction money is in defense production loans. In fiscal 1952, for example, $135 million out of the $187 million for construction went to defense plants. And in the first six months of the current fiscal year, $105 million of the $114 million in construction money was for the building of defense plants.

That kind of loan is possible only under the Defense Production Act. It will end when Congress terminates the lending authority. The act comes up for extension at the present session.

SEND-OFF—Lawrence Ottinger, whose company will make Zeprex in the U. S., introduces it to a group of trade reporters in New York City.

ENR photos by Compton

Selling the States a product from Sweden

If you buy building materials, you may have a salesman in your office one of these days performing stunts (see pictures) with Zeprex, a lightweight mineral material that replaces concrete in building superstructures—but can be sawed, drilled, cut with an axe, and nailed like wood.

Zeprex is made of siliceous material, cement and water, along with certain chemicals. It has a unique structure: In cross section, it looks like a minute honeycomb, with thousands of tiny spherical cells separated by very thin walls.

U. S. Plywood Corp., which plans to make Zeprex in this country, introduced it to reporters in New York last month. The material is now said to be used in about one-half of the new buildings in Sweden, where it was developed.

IT FLOATS—Bengt Lundgren, Swedish engineer, shows that his firm's product is slow to absorb water.

WORKABLE—Zeprex can be handled like wood, and has the further advantage of being termite-proof.

LIGHT—In its most commonly used density, the material is about one-fifth the weight of concrete.

INCOMBUSTIBLE—It won't burn, and has low heat conductivity. Tissue-paper behind the block is unscorched.

Building cost trend, 1911-14 = 100

A: Reinforced concrete
B: Brick

		Jan. '52	July '52	Jan. '53
North Atlantic Div.	A	481	485	496
	B	474	479	485
South Atlantic Div.	A	510	517	527
	B	485	488	494
North Central Div.	A	472	481	492
	B	442	453	459
South Central Div.	A	454	460	471
	B	426	438	445
Plateau Division	A	451	456	471
	B	443	447	458
Pacific Division	A	466	468	477
	B	438	443	448

Gas plant cost trend, 1911 = 100

A: Total constr. & equip.
B: Mech. equip. excl. gas holders

		Jan. '52	July '52	Jan. '53
North Atlantic Div.	A	527	536	540
	B	553	554	567
South Atlantic Div.	A	510	520	525
	B	553	554	567
North Central Div.	A	491	503	508
	B	553	554	567
South Central Div.	A	474	475	479
	B	553	554	567
Plateau Division	A	453	460	467
	B	553	554	567
Pacific Division	A	489	494	498
	B	553	554	567

Electric light and power cost trend, 1911 = 100

A: Total constr. & equip.
B: Accessory elect. equip.
C: Sub-sta. equip.

		Jan. '52	July '52	Jan. '53
North Atlantic Div.	A	472	480	481
	B	420	430	426
	C	359	366	365
South Atlantic Div.	A	494	504	506
	B	432	442	438
	C	370	377	377
North Central Div.	A	448	456	458
	B	388	391	388
	C	328	333	332
South Central Div.	A	458	465	468
	B	416	423	420
	C	352	356	356
Plateau Division	A	447	454	460
	B	401	408	407
	C	342	347	348
Pacific Division	A	454	459	461
	B	409	413	409
	C	357	359	358

Will utility costs keep climbing in '53?

The trend in public-utility construction costs was up in the year ended in January 1953, just as the industry starts what is expected to be its peak year for new construction.

The trend is shown by the Handy-Whitman's construction cost indexes for the industry, shown in the tables. Earlier indexes appeared on page 97 of Sept. 4, '52 special Cost Issue of ENR.

By studying this table, one can see that practically every type of construction cost rose in every region of the U. S., but that some types went up faster than others.

Brick building construction costs, for instance, rose less than reinforced concrete buildings during the year from January 1952, to last January, in every region except the South Central. The rise ranged from 1.9% in the South Atlantic region to 4.4% in the South Central states. Cost increases for reinforced concrete structures ranged from 2.4% in the Pacific states to 4.4% in the Plateau area—the eight states bounded by Montana on the north and Arizona and New Mexico on the south.

Just to compare, ENR's building cost index for 20 U. S. cities rose 4.8% in the same period.

The Handy-Whitman index of construction costs for gas plants shows increases of anywhere from 1.1% in the South Central area to 3.5% in the North Central states.

Total costs (including equipment) of electric plants didn't gain as fast as gas plant construction costs. Only exception: the South Central states, where the index rose 2.2%, twice as much as for gas plants in the same area. Increases ranged from 1.5% in the Pacific states to 2.9% in the Plateau area.

Activity This Week

As reported to ENR
(in millions of dollars)

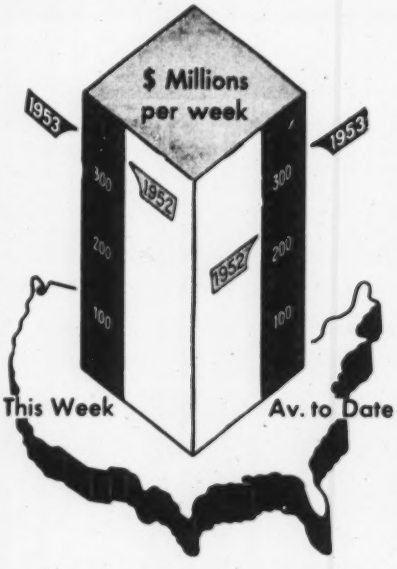
Amount of contracts let

	This Week	Cumulative 14 wks 1953	1952	% chge
Federal	$23.3	$430.8	$487.4	−12
State and Municipal	160.2	1,337.9	1,008.1	+33
Total pub.	183.5	1,768.7	1,495.5	+18
Total priv.	158.5	2,682.9	1,878.2	+43
U. S. Total	**$342.0**	**$4,451.6**	**$3,373.7**	**+32**

Contracts by type of work

Waterworks	$7.2	$66.8	$73.7	−9
Sewerage	5.2	96.8	52.8	+83
Bridges	5.8	225.7	87.9	+157
Highways	75.8	377.2	301.6	+25
Earthwork, Waterways.	3.4	95.3	121.5	−22
Buildings:				
Public excl. hsg.	40.9	455.5	415.9	+10
Housg., pub.	28.2	214.6	271.5	+21
Housg., priv.	65.0	1,128.9	738.9	+53
Commercial	37.5	261.8	138.5	+89
Industrial	39.9	1,086.9	815.3	+33
Unclassified	33.1	442.3	356.1	+24
Total	**$342.0**	**$4,451.6**	**$3,373.7**	**+32**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.



ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Mar.	587.44	282.38	123.15
	Feb.	587.19	282.26	123.09
Bldg. cost.	Mar.	424.89	229.68	120.78
	Feb.	425.24	229.87	120.88
Volume	Feb.	480	195	139

Business briefs . . .

• **Virginia State Highway Commission** has turned down proposals that private turnpike corporations build three toll roads in the state (ENR Mar. 26, p. 151). The roads would have cost more than $300 million.

• **Gov. Dan Thornton's** suggestion that Colorado finance superhighways by issuing up to $30 million of tax anticipation warrants is so dead "rigor mortis has set in," says the governor. Thornton suggested this method to the legislature last January, but there's been no action.

• **Bucyrus-Erie Co.**, producer of excavating, earthmoving, and drilling equipment, reports that 1952 net sales were around $79 million, about the same as 1951. But profits were down from $6 million in 1951 to about $5 million last year.

• **Fifty-two local housing** authorities have sold about $100 million of short-term notes, backed by the Public Housing Administration, at an average interest rate of 1.44%. In addition, New York City's Housing Authority sold $29 million of notes at about the same interest cost.

• **Shield Chemical Corp.**, Vernoa, N. J., plans to sell about $300,000 of common stock to increase working capital for sales expansion in the construction specialties field.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: April 16, 1953

New York State Road Work Contract C-5

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 16th day of April 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, District Engineer, 109 No. Genesee St., Utica New York				
Herkimer	M.T. 53-6 S.T. 53-17 R.C. 53-26	New York State Thruway-Mohawk Section-Subdivision 10C, 11A and 12A (Fort Herkimer-Indian Castle); Co. Rd. #66; Mohawk-Jacksonburg-Little Falls, S.H. 8401; Paines Hollow-Stonehouse, S.H. 1363; Little Falls-Mont. Co. Line, S.H. 831; SD Line and JR line	7.82 Thy. 2.24 Acc.	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 9.39 Mi. Asp. Conc. Ty. 1A, Opt. = 0.09 Mi. Fdtn. Crse. Grav. = 0.58 Mi. 5 Hy. Seps. Composite I-Beams 257', 153', 153', 177.5', and 177.5', 1 Hy. Sep. Composite Plate Girder 229'	$550,000 Plans $50	$9,877,000
		DISTRICT No. 6				
		J. H. THOMAS, District Engineer, 30 West Main Street, Hornell, New York				
Steuben	F.C. 53-1	City of Corning: Monkey Run Conduit (Flood Contra		15.5' x 10.5' Conc. Conduit	5% of Bid Plans $10	308,565
		DISTRICT No. 8				
		J. S. BERRY, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York				
Ulster	C.T. 53-7 C.T. 53-8P S.T. 53-16 R.C. 53-25	New York State Thruway-Catskill Section-Subdivision 3 (Whiteport-Kingston Pt. 1 & Pt. 2); Rte. 28 Interchange; Whiteport Town Rd. Relocation; Co. Rd. 94; Co. Rd. 50; Steward Lane Relocation; Kingston-West Hurley S.H. 5173	7.61 Thy. 1.66 Acc.	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 8.07 Mi. Asp. Conc. Ty. 1A, Opt. = 0.67 Mi. Bit. Treat. Graded Grav. = 0.37 Mi. Misc. Work = 0.16 Mi. 6 Hy.-RR Seps. Composite I-Beams 338', 204', 213.4', 258', 127.6', & 245.5', 2 R.R. Seps. I-Beams 40.7', & 34.7', 1 Br. Composite I-Beam 311'	500,000 Plans $100	8,903,000
Westchester	SMRP 53-1P	Sawmill River Parkway (Mt. Kisco-Katonah Pt. 1)	3.05	9" Cem. Conc. Pavt. 2 @ 24' Wide	70,000 Plans $10	1,242,000
N. B. Contract Nos. H.T. 53-3A and H.T. 53-3B combined are for the same work as Contract No. HT. 53-3C. Bids may be submitted on either or both HT. 53-3A and H.T. 53-3B. If a bid is submitted on H.T. 53-3C the bidder must also submit separate bids on both H.T. 53-3A and H.T. 53-3B. Award will be made on the basis of responsible low bids resulting in the lowest total cost.						
Westchester	H.T. 53-3A	New York State Thruway-Hudson Section-Subdivision 9B Tappan Zee Bridge-Cont. A	0.96	E. and W. Approach Spans, Truss and Stringer Type on Existing Bents.	600,000 Plans $50	11,234,000
Westchester	H.T. 53-3B	New York State Thruway-Hudson Section-Subdivision 9B Tappan Zee Bridge-Cont. B	0.47	Steel Bents on Existing Conc. Fdtns. and Main Span a Cantilever Truss with Suspended Span	1,000,000 Plans $50	19,850,000
Westchester	H.T. 53-3C	New York State Thruway-Hudson Section-Subdivision 9B Tappan Zee Bridge-Cont. C	1.41	Combination of Cont. A and Cont. B	1,600,000 Plans $50	31,084,000
		DISTRICT No. 9				
		F. W. DONOVAN, District Engineer, 71 Frederick Street, Binghamton, New York				
Delaware	53-BWS 2, 8, 9, 9A, 9B	New York City Board of Water Supply Rds. 2, 8, 9, 9A and 9B (Pepacton Reservoir)	7.25	Bit. Mac. Ty. 1 (Pen. Method)	80,000 Plans $25	1,426,000
		DISTRICT No. 10				
		J. J. DARCY, District Engineer, Montauk Highway, Babylon, L. I., New York				
Bronx	FANETC 53-1	New York State Thruway-New England Section-Contract 5A (Eastchester-Creek Bridge-Substructure) Proj. UI-1068(3)	0.49	Grading, Drainage, Misc. Work Bascule Br. Substruct. 527'	145,000 Plans $25	2,633,000
Suffolk	SMSP 53-1	Sunken Meadow Spur Parkway (Contract 5)	3.26 Pky. 1.84 Acc.	8" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 3.01 Mi. 8" Cem. Conc. Pavt. (Widening) = 0.48 Mi. Misc. Work & Fencing = 1.61 Mi.	48,000 Plans $15	876,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

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U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3922) will be received at Bismarck, North Dakota, until April 30, 1953, for furnishing labor and materials for Garrison switchyard approaches, Transmission Division, North Dakota, Missouri-Souris District, Missouri River Basin Project. Location Mercer and McLean Counties, North Dakota. Principal items are: Furnishing 50' treated timber piles, 6,000 lin. ft.; driving treated timber piles, 4,800 lin. ft.; furnishing and placing reinforcement bars, 41,000 lbs.; erecting steel structures, 510,000 lbs.; furnishing and stringing three ACSR conductors, 5.55 miles of line; and other work. Completion time 440 days. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 53, Denver Federal Center, Denver, Colorado.
FRED G. AANDAHL, Assistant Secretary for Water and Power Development Department of the Interior

OFFICIAL PROPOSALS

Bids: April 21, 1953

Contract No. 25, 25A, 25B

WEST VIRGINIA TURNPIKE COMMISSION
ADVERTISEMENT FOR PROPOSALS

Sealed proposals will be received by the West Virginia Turnpike Commission for:

The work to be done under Contract 25 consists in performing the required grading and drainage for approximately 6.3 miles of the West Virginia Turnpike including the substructures for nine bridges and the relocation of approximately 1.7 miles of State Highway. This work is located between the town of Mossy, mile 51.6, and the town of Mahan mile 57.9, Fayette County, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The principal items of work include:

	Approximate Quantity 25A	25B
Clearing and Grubbing	95 Acres	60 Acres
Excavation (all types)	1,861,000 C. Y.	1,157,000 C. Y.
Concrete	6,000 C. Y.	9,000 C. Y.
Reinforcing Steel	503,000 Lbs.	675,000 Lbs.
Culvert Pipes and Underdrains	6,500 Lin. Ft.	3,000 Lin. Ft

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A.M. Eastern Standard Time, on April 21, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE COMMISSION
D. H. Morton, Chairman

March 23, 1953

Bids: April 20, 1953

Furniture, Floor Covering and Miscellaneous Items for Newark Airport Terminal Building Restaurant, Newark, New Jersey

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 67

Sealed proposals for furnishing and installing furniture, floor covering and miscellaneous items for the Newark Airport Terminal Building Restaurant, Newark, N. J., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111-8th Ave., New York 11, until 11:00 A.M. on the morning of Monday, April 20, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: April 28, 1953

Expansion of Cafeteria

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT EXD-140.001

Sealed proposals for the expansion of the Cafeteria on the sixteenth floor of the Port Authority Building will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M. on Tuesday, April 28, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 2, 1953

Bids: April 27, 1953

Headhouse Fire Protection

THE PORT OF NEW YORK AUTHORITY
HOBOKEN-PORT AUTHORITY PIERS
CONTRACT HP-110.007

Sealed proposals for the installation of a sprinkler system for Headhouse fire protection at Hoboken—Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 1111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M. on Monday, April 27, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 2, 1953

Bids: April 14, 1953

Lobby Lighting

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT PAB-110.009

Sealed proposals for furnishing and installing lighting fixtures in the 8th and 9th Avenue lobbies of the Port Authority Building will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:45 P.M. Tuesday, April 14, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 2, 1953

Bids: April 20, 1953

Tender for the Supply and Installation of Travelling Bucket Crane

THE CITY OF EDMONTON
CITY ENGINEERS DEPARTMENT
CONTRACT NO. 62-C

Sealed Tenders marked "TENDER FOR THE SUPPLY AND INSTALLATION OF TRAVELLING BUCKET CRANE" will be received by the CITY COMMISSIONERS, 301 CIVIC BLOCK, Edmonton, Alberta, until NOON, MONDAY, APRIL 20th, 1953.

The work to be done includes the furnishing and installing of a 4-motor, double-girder type crane complete with bridge, trolley, operator's cab and two cubic-yard grab bucket. The crane to be installed in the new building at the City of Edmonton Incinerator.

Specifications and all information may be obtained at the City Engineer's Office, 6th floor, Civic Block, Edmonton, Alberta, on and after March 27, 1953, on payment of Fifteen ($15.00) Dollars, which sum will be refunded on return of documents and receipt.

Bids must be accompanied by a certified cheque for Two Thousand ($2,000.00) Dollars and the consent of a surety company.

The lowest or any tender not necessarily accepted.

THE CITY COMMISSIONERS,
EDMONTON, Alberta

Bids: April 23, 1953

Construction of a Three Story Railroad Signal Tower Located at Plainfield, N. J., Under the Dunellen-Plainfield Grade Crossing Elimination, Order of the Public Utility Commission, State of New Jersey

Sealed proposals will be received by The Central Railroad Company of New Jersey, at the office of the Chief Engineer of the Railroad, located at the Jersey City Terminal, Room No. 44, Foot of Johnston Avenue, Jersey City, New Jersey, until 1:00 P.M. Eastern Standard Time, Thursday, April 23, 1953, and then publicly opened and read for the construction of a three story masonry and reinforced concrete railroad signal tower measuring approximately 17'-0" x 44'-0" in plan.

Proposal forms, drawings, specifications, bond and insurance requirements may be obtained at the office of the Chief Engineer of The Central Railroad Company of New Jersey, at the above address on or after March 30, 1953.

This work will be awarded as a general contract and the successful bidder will be required to perform with his own organization not less than 80% of the total value of the contract, except for materials or items of work which require specialized knowledge, craftsmanship or equipment not ordinarily available in the contractor's organization.

S. L. Mapes, Chief Engineer.
The Central Railroad Company of New Jersey
Jersey City Terminal, Jersey City 2, N. J.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3915 will be received at Friant, California, until April 21, 1953, for furnishing labor and materials for earthwork and structures for laterals, sublaterals, and wasteways, north section of Unit No. 1, Madera Distribution System, Central Valley Project, California. Location south of Madera, California. Principal items are: 453,000 cu. yds. excavation; 1,500 cu. yds. concrete; 6,800 lin. ft. concrete pipe; 26,000 lbs. gates and metalwork, and other work. Completion time 240 days. For particulars, address Bureau of Reclamation, Friant, California; or Building 53, Denver Federal Center, Denver, Colorado.

FRED G. AANDAHL, Assistant Secretary
for Water and Power Development
Department of the Interior

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3909) will be received at Coachella, California, until 10 a.m. April 16, 1953, for furnishing labor and materials for earthwork, pipe lines, and structures, Lateral 120.8 and sublaterals, Part 2 of Unit 8, Coachella Valley Distribution System All-American Canal System, Boulder Canyon Project, Arizona-California-Nevada. Location near Indio, California. Principal items are: 67,000 cu. yds. excavation; furnishing and laying 60,000 lin. ft. of precast concrete pipe 12- to 54-inch diameter; installing 45,000 pumps; and other work. Completion time 330 days. For particulars, address Bureau of Reclamation, Coachella, California; or Building 53, Denver Federal Center, Denver, Colorado.

FRED G. AANDAHL, Assistant Secretary
for Water and Power Development
Department of the Interior

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3919 will be received at Denver, Colorado, until April 28, 1953, for furnishing three 32-foot by 20-foot top seal radial gates for Tiber Dam, Missouri River Basin Project, Montana. Delivery is desired within 370 days. For particulars address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

FRED G. AANDAHL, Assistant Secretary
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P-7261, Engineering News-Record
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(Continued on the opposite page)

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P-7288, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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P-7013, Engineering News-Record
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P-7376, Engineering News-Record
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POSITIONS VACANT
(Continued from opposite page)

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POSITIONS WANTED

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REGISTERED ARCHITECT—Experienced on power, water, industrial & Municipal projects. Also general practice. University graduate—40 —Married—registered several states. Wish permanent location smaller city. PW-7273, Engineering News-Record.

DISTRICT REPRESENTATIVE for heavy construction, mining, and industrial equipment manufacturer desires distributor connection in sales management or other administrative position. College graduate, factory trained, extensive field experience. Age 32. Married. Replies confidential. PW-7394, Engineering News-Record.

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SEWER CONSTRUCTION foreman—Italian, middle age—with wide experience and exceptional ability will consider permanent or promising position. PW-7418, Engineering News-Record.

(Continued on the following page)

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PW-7419, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

POSITIONS WANTED
(Continued from preceding page)

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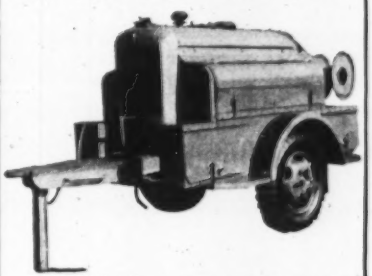

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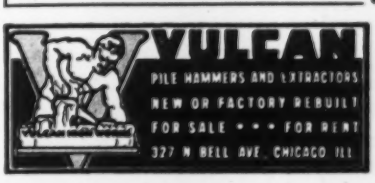

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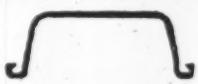

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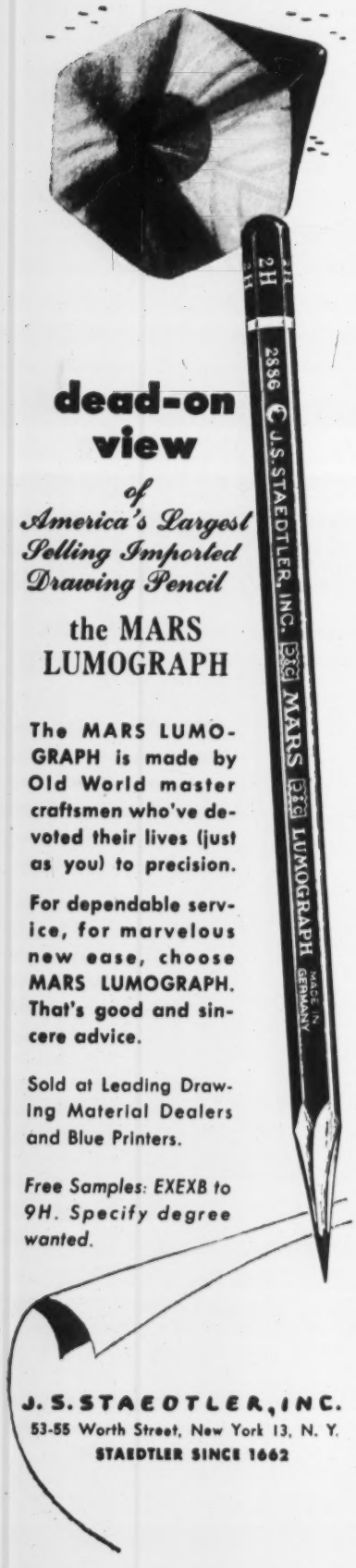

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With the DynaTrode, a new type of electrode, and any welding machine of 250 amp. capacity or greater, any arc welder is said to be able to cut or pierce granite, firebrick, asbestos, tile, cinder block and many other ceramic nonconducting materials.

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The rod consists of two parallel metallic cones insulated from one another and surrounded by a heavy coating, which not only interacts thermo-chemically with the core to produce the arc but disintegration is so timed as to be slightly slower than that of the core materials. The result of this time lag is that the coating forms a conical tube, or crucible, which directs the arc and provides a reasonably high degree of control.

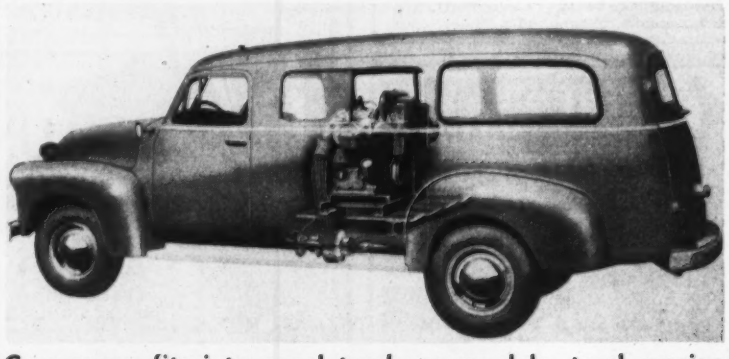
In lateral cutting, the 8,000 deg. F. temperature of the arc allows the rod to be pushed into the material while molten rock flows out of the hole. In downcutting, the force of the arc is sufficient to force melted materials out of the hole.

Cutting rates with the DynaTrode will vary with the material and type of equipment used, but with 400 amp. equipment cutting speed ranges from 1 in. to 3 in. per minute. Similarly, minimum hole diameter is dependent on the material to be pierced. With the diameter of rod now available, the smallest diameter hole that can be produced is ½ inches in tile and 2 inches in granite.

Although the DynaTrode may be used with conventional welding equipment, a special holder has been designed by the company to give the operator greater control. Eutectic Welding Alloys Corporation, 172nd Street and Northern Boulevard, Flushing 58, New York.

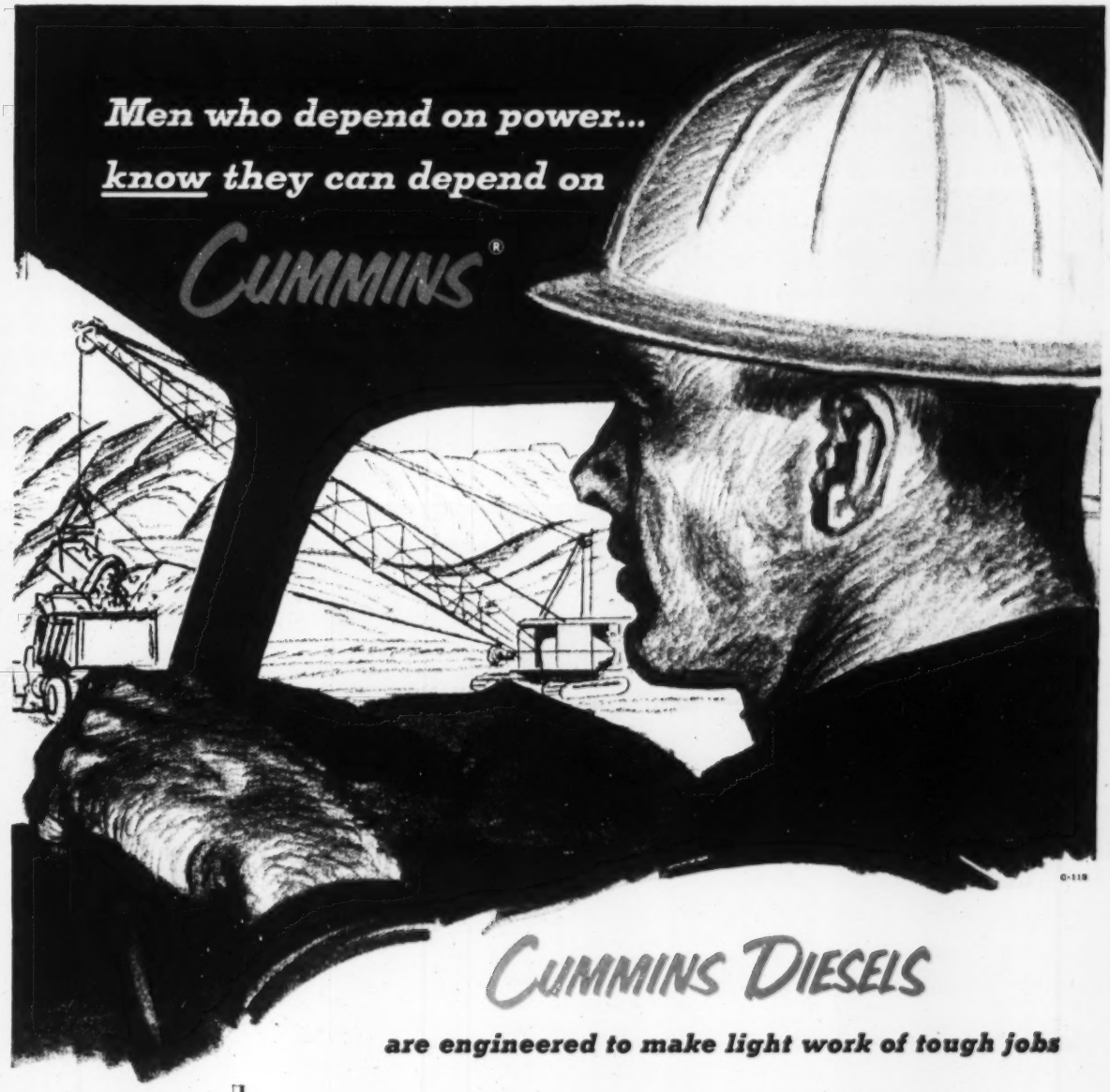
Conductive flooring cuts shock and explosion hazard

Designed for use in operating rooms where shock and explosion risks are relatively high, a new electrically conductive mosaic floor tile can be used also for floors in control and research laboratories or other processing areas where the generation of static electricity is undesirable or dangerous. Installation is conventional. Mosaic Tile Company, Zanesville, Ohio.



Compressor fits into panel truck, powered by truck engine

THIS IS Davey's Auto-Air compressor which was on display a few weeks ago at the Associated Equipment Distributor's convention in Chicago. Known as Model 105-VBA, it's a 105-cfm unit and is driven directly by the truck engine through the driveshaft and a Davey P-80 heavy-duty power takeoff. The compressor occupies only one-third of this panel type truck, leaving ample room for men, tools and materials.—Davey Compressor Co., Kent, Ohio.



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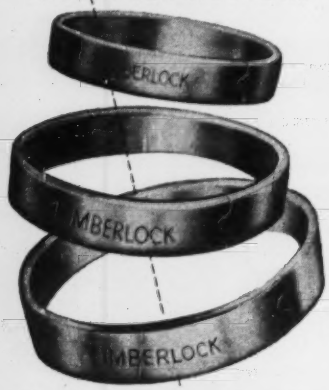

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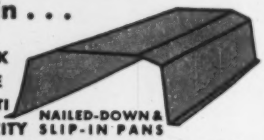

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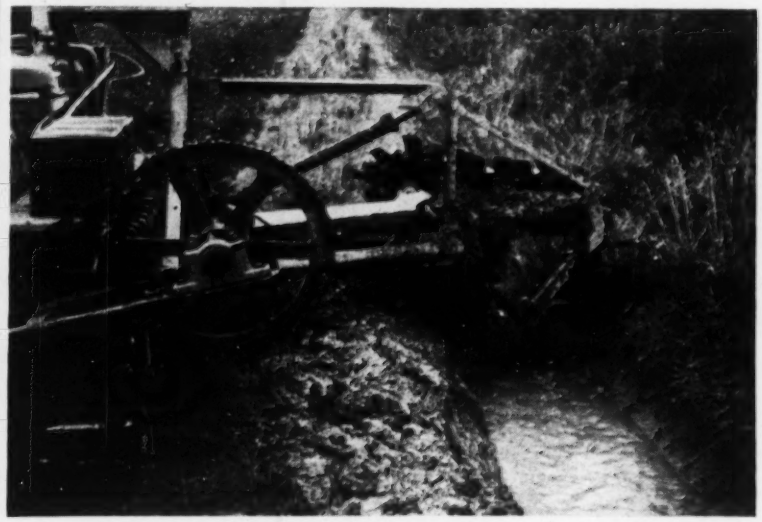

New Zealand ditch cleaning machine employs novel principle

A ditch cleaning machine developed by the Canterbury Agricultural College of the University of New Zealand is fully mechanized and may be adjusted to conform to any ditch shape. The cleaning unit of the machine consists of an endless chain moving over a driving sprocket and a series of rollers perpendicular to the ditch. A set of scrapers attached to the chain cut and remove spoil from the ditch.

The unit may be attached to the side of a tractor or any suitable power unit, and is raised or lowered by a hydraulic lift. Power to drive the chain is transmitted from the tractor through a power take-off.

In operation the tractor is driven parallel to the ditch. The scrapers cut down the far bank, across the bottom of the ditch, and up to deposit the dredged material on the edge of the near bank. Chain speed is such that the spoil is lifted just clear of the near bank and not thrown on any part of the tractor.

The machine is adjusted to work in ditches of any cross section simply by setting the rollers which support the chain drive. Being side-mounted the ditch cleaner can be used close to or under obstructions.

The machine is equipped with a safety clutch to prevent serious damage when a stone or timber jams the mechanism or a hidden obstruction is encountered.

Although unavailable at present, it is claimed that the success of the machine has been such that initial production is about to start in New Zealand.

Mobility emphasized in trailer field office

Now contractors can take their field office with them intact—instead of assembling, disassembling and reassembling prefab offices or using small and usually cramped portable offices. Trailer Village Sales now has available fully equipped 35 ft trailers that may be used as field offices without conversion. Internal furnishings include a large drafting table, plans rack, two 7′ x 3′ knechole desks, a space heater and a wash room. Trailer Village Sales, Inc., 8642 Pulaski Highway, Baltimore, Md.

Reflective highway signs unaffected by exposure

Unusual durability is claimed for a new reflective sign material Fre-Lite. As evidence, the manufacturer cites a stop sign in Alameda, Calif., erected in a location exposed to salt spray and alternately dry and humid weather conditions. After three years, the sign has shown little deterioration. The material is available in standard colors and combinations with silver having the highest intensity of reflection. Cost of Fre-Lite is said to compare favorably with that of any other type of sign materials. Harry K. Ashley Mfg. Co., 2305 Cherry Street, San Leandro, Calif.

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the greatest shovel improvement in 20 years. It's smoother, faster, more dependable. It eliminates the old swing frictions with their constant headaches and replacement costs. Magnetorque lasts the life of your machine. You should know the facts about it!

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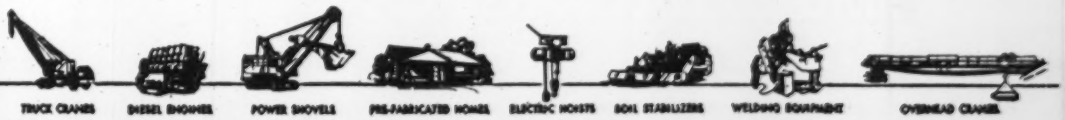

Runabout ditcher sports new bucket line, fluid coupling

Last June we announced the Runabout ditcher Model 705-A and its Hydracrowd hydraulic transmission that provides an infinite number of forward speeds from zero to 16 fpm, independent of bucket line speeds (ENR Jun 19 '52 p 156). The new ditcher, Model 705-B adds a complete fluid coupling to the Hydracrowd transmission and a second innovation is the design of a special curved-tooth bucket line that is said to double normal digging tooth life.

The Chrysler fluid coupling provides a hydraulic cushion that eliminates shocks and surge loads. The maker also claims that, with the fluid coupling, underground obstructions, hidden pipes and the like present less of a problem since too much resistance will cause hydraulic coupling to slip.

A counterbalanced valve in the hydraulic drive mechanism eliminates runaway tendencies when the machine is digging on a downhill slope. It maintains a constant crowding speed, resisting gravitational pull. Common practice when digging in muck or sticky soil is to use curved cutters that cause the material to curl up into chips. The curved teeth on the new Runabout ditcher are said to act in much the same way. This new bucket line can be installed in earlier model Runabouts.

Digging range of the B-G Model 705-B is 5½, 7½ and 10½ in. wide to a maximum depth of four feet. Barber Greene Co., 400 N. Highland Ave., Aurora, Ill.

Common head for tamper saves man-hours

The LeRoi-Cleveland Triple Hand Tamper consists of three standard No. 11 backfill tampers assembled to a common head.

The company claims that this one-man tamper, delivering 550 blows per minute at each butt, can replace five hand-operated tampers with considerable savings in man-hours, air compressor service and fuel consumption.

The triple butt arrangement is well suited for use in close quarters such as narrow tunnel work, close foundation tamping or abutment work. The tamper is equipped with long handlebars to avoid injury to the operator. Cleveland Rock Drill Div., 12500 Berea Road, Cleveland 11, Ohio.

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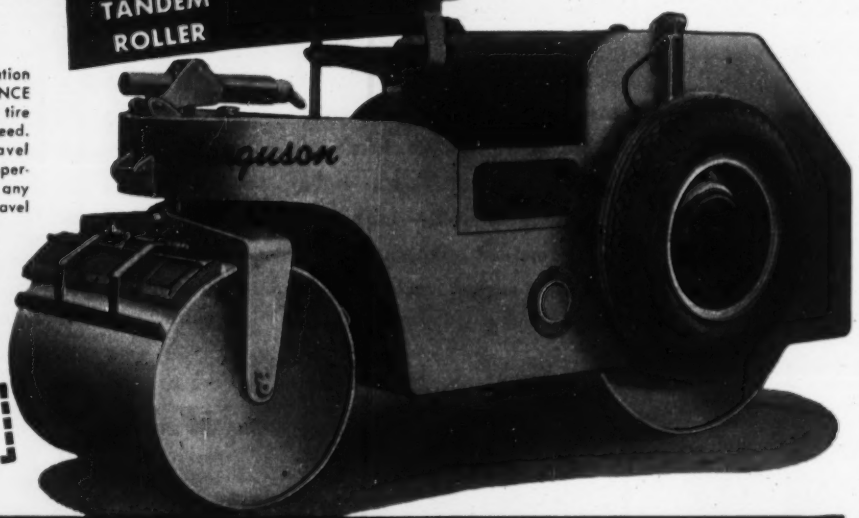

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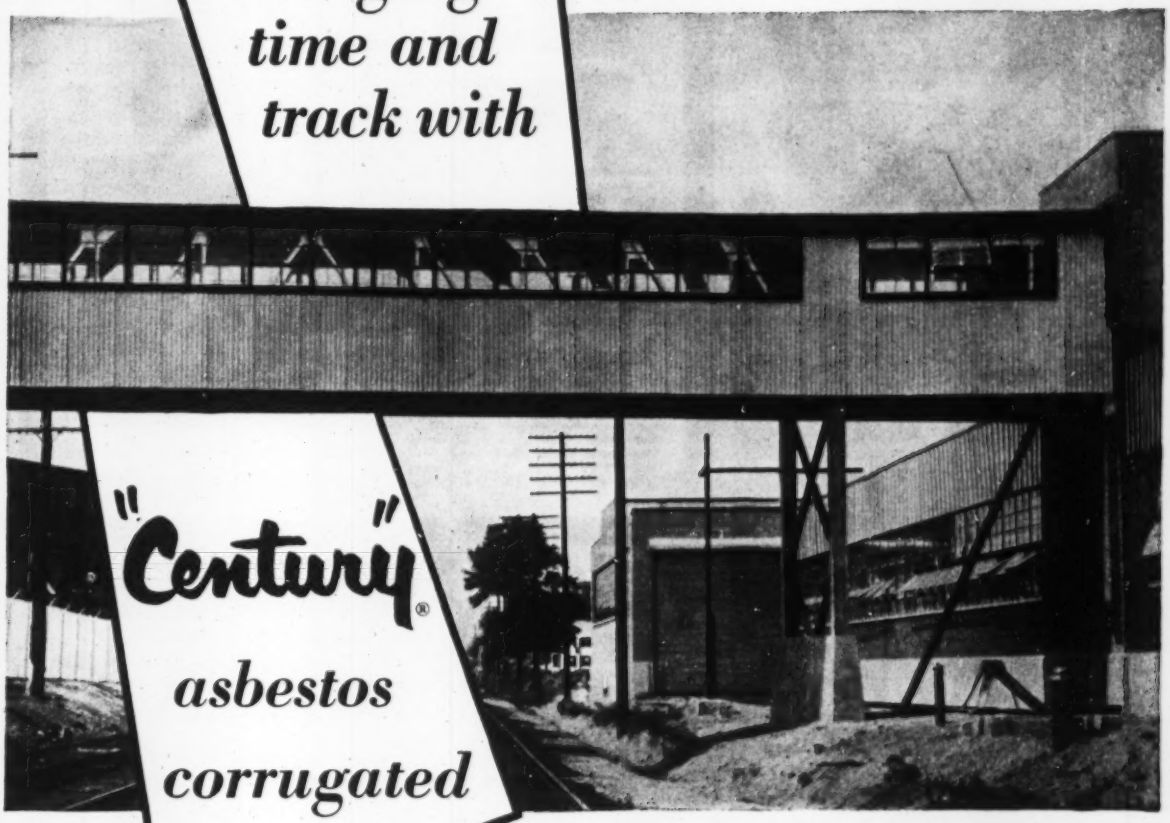

"Century"® *asbestos corrugated*

Inter-plant bridge of the Trumbull Electric Department of the General Electric Co. in Plainville, Conn. Sidewalls of bridge and the building on the right constructed of "Century" Asbestos Corrugated, and applied by Hampden Cornice Works Inc., Springfield, Mass. Supervisor of Construction: General Electric Realty Corp., Schenectady, N.Y. Engineer and Architect: Lockwood Greene Engineers Inc., New York, N.Y. General Contractor: The Gellatly Construction Co., Bridgeport, Conn.

"Century" Asbestos Corrugated makes an ideal siding for this new inter-plant bridge and building because of its outstanding durability and freedom from maintenance. After many years this long-lived siding will still be sound, serviceable, and weather-tight.

If that's the kind of dependable siding and roofing *you* are seeking, you ought to know more of the many advantages in using "Century" Asbestos Corrugated. Here are a few facts about this versatile, economical material:

It is made in large, strong sheets from portland cement and asbestos fiber—therefore *cannot* burn, rot or rust. It is impervious to rodents and termites. It is completely, permanently weatherproof. Although it never needs paint, it will take decorative colors well.

"Century" Asbestos Corrugated has proved itself to be a maintenance-free and long-lasting building material—well worth your close consideration. We shall gladly send you complete information on request.

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After Amscoating with Thermalloy 4, these Piercer Guide Shoes reduced down time and kicked production up.

Composite shear blade of mild steel base metal, hardfaced with Thermalloy 4 on cutting edge. Lower view: part after machining.

Hot trimmer die and punch Amscoated with Thermalloy 4 increased service life, cut costs.

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If you have a wear problem involving high temperatures and requiring resistance to impact, this new Amsco hardfacing electrode can save you time and money

Elevated temperatures are tough to cope with in situations involving thermal shock, metal-to-metal wear, hot gas corrosion, high temperature oxidation—especially when you need great impact resistance. Here's where Amsco Thermalloy 4 can step in and give you longer service life, and big savings in time and money.

Supplied as both a composite coated electrode for electric welding or as a bare cast rod for gas welding, both types deposit a high-carbon stainless alloy containing chromium and nickel as the principle alloying elements. In many applications, it can replace expensive nickel base alloy materials. Thermalloy 4 is packaged in 50-lb. boxes or in 10-lb. packages in 50-lb. boxes. For detailed analyses and other pertinent information, write for catalog sheet on Thermalloy 4 or contact your nearest Amsco distributor.

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PUBLICATIONS

Liquid level controls—This 8-page booklet with sketches and photographs describes a new liquid level control operated by the changes in air or gas pressure. Sensitive to level variations of inches by passing air at a predetermined rate through a bubbler pipe dropped into the liquid, the control cannot clog, freeze or corrode. It can be engineered for automatic control of any number of pumps, valves, alarms, indicators, telemetering apparatus for reservoirs, sewage systems, and industrial processes. Ask for Autocon Bubbltrol, AUTOMATIC CONTROL COMPANY, 1005 UNIVERSITY AVENUE, ST. PAUL 4, MINNESOTA.

Concrete curing compounds – Four processes for curing concrete are described with detailed recommendations for each case in this 8-page folder. Processes for pavements, tilt-up precast panels, floor slabs, and concrete work in hot climates are outlined. Write HUNT PROCESS CO., INC., 7012 STANFORD AVE., LOS ANGELES 1, CALIFORNIA.

Nailing channels—For light suspended ceiling construction this four-page folder describes all phases of use and installation of nailing channels. Diagrammatic drawings show its use with kerfed acoustical tile, with or without building paper backing, or with gypsum backing, and its installation with rock lath ceilings. Write the SANYMETAL PRODUCTS CO., INC., SUSPENDED CEILINGS DIVISION, 2093 EAST 19TH STREET, CLEVELAND 15, OHIO.

Soil sampling tools—A complete line of soil sampling tools, diamond and shot core drills, drilling accessories and equipment is described and illustrated with accompanying specifications in this 16-page catalog. Motors for drilling, driving and jetting piles, and hoisting pipe are included in BULLETIN NO. 25, ACKER DRILL CO., INC., SCRANTON 3, PA.

Circuit breakers—Explaining operating principles of basic circuit breaker designs, and providing engineering data on factors of application, this 16-page has diagrams and charts outlining temperature factors, inrush current effects, tripping and reset time. Of value to residential designers, this booklet provides time delay curves, wire deterioration rates at various ampere values, and discussions of quick or slow make-and-break particularly with reference to branch circuit protection. Write for manual 101, HEINEMANN ELECTRIC CO., 444 PLUM STREET, TRENTON 2, N. J.

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EDITORIALS

Back on sensible street

THE SUPREME COURT DECISION upholding the Federal Power Commission's licensing of the Virginia Electric and Power Co. to build a hydro dam at Roanoke Rapids on the Roanoke River in North Carolina has been widely hailed as a victory for the private utilities, but it is much more than that, marking as it does a return to the sensible idea that private capital can carry some of the burden of river development.

Much of the comment so far has seemed to credit the present national administration with the favorable turn of events. Actually such a conclusion cannot be supported, even though it may be assumed that the new management in the Department of the Interior is in accord with the decision. The fact is—and it is significant—that the same Supreme Court justices who were on the bench during the last administration brought in the 6 to 3 ruling. Thus the decision, even had it come before the last election, probably would have been the same.

Coming when it does, however, the decision will be implemented rather than fought. This may be deduced from Interior Secretary McKay's statement when he took office: "Private enterprise and public ownership can work hand in hand," and from the fact that the Army's Corps of Engineers has never gone along with the extremists who attempted to block all hydro development by the private utilities. With these two agencies and the Federal Power Commission now working in harmony, river development should be able to go ahead on the sensible basis that always has been possible.

The public is to be the big gainer in this change of affairs. Whereas under the federal power philosophy all taxpayers footed the bills for all hydro projects, under the "hand-in-hand" philosophy projects undertaken by private capital will place a tax burden only on the users of the electricity—whose rates for power must be high enough to cover taxes. Not only should the government's tax requirements be lower, it will be collecting additional taxes not now available. The taxpayer who uses electricity will pay out no more (lower taxes plus higher rates for current) than he did before in taxes alone, and he may pay less.

Nor is there any force in the argument that the public is giving away power sites. Not only is the site merely leased to a private utility, but the development that will be made and the rates that can be charged are under close governmental regulation. In this regard there is a good deal to the utilities' contention that they should be called "public" and not "private" utilities.

All this is not to say that the utilities are to take over all of the hydro power job. They can't and they won't. But they can help, and the Roanoke Rapids decision, plus the new attitude in Washington, gives them the opportunity. At least it may be expected that applications for licenses for private power development will receive sympathetic consideration whenever a proposed project is consistent with an overall river basin plan laid down by the federal government. By leaving such projects to private capital, public money can be used for those projects that are too big for utility development, or which are so much in the public interest as to deserve a subsidy. With a working partnership such as this established, hydro development will be back on the right track.

Wages and productivity

THE INCREASING DISPOSITION of labor and management to develop some link between wages and worker productivity warrants a word of warning: Be sure that the productivity figures being used are applicable to the particular industry, operation or job for which a wage rate is being set.

A case in point is the recent statement from the American Federation of Labor that productivity in the private economy increased 13.2% between 1949 and 1952 while the real wages of factory workers rose only 7%. The significant fact in this bid for higher wages is that the "private economy" and the "factory" are not the same thing. According to an estimate by the McGraw-Hill department of economics, factory productivity in the period in question increased only 6.8%, almost exactly matching the rise in real wages that the factory workers received.

Obviously the 13.2% productivity figure is not the one to which factory wages should be related. That labor, however, is entitled to some share in the financial benefits of higher productivity seems both fair and in the economic interest of the country. But others who also should share are the consumer (through lower prices) and management (through higher profits). When this three-way sharing of productivity gains is properly meshing, purchasing power is increased and industrial expansion is promoted—in short, prosperity ensues. Therein rests the justification for a tie between productivity and wages, but by the same token a necessity for dividing the gains among labor, the consumer and management.

As to the construction industry, its productivity figures are not those of the factory nor of the economy as a whole, but only of itself. Moreover, operations in the construction industry are so varied—and so widely divergent in the amounts of labor-saving equipment used—that each has its own productivity pattern. When there is a disposition to bargain for wage increases on the basis of improved productivity, contractors would do well to examine each job's record before signing a contract—and then to keep in mind that productivity gains must be divided three ways.

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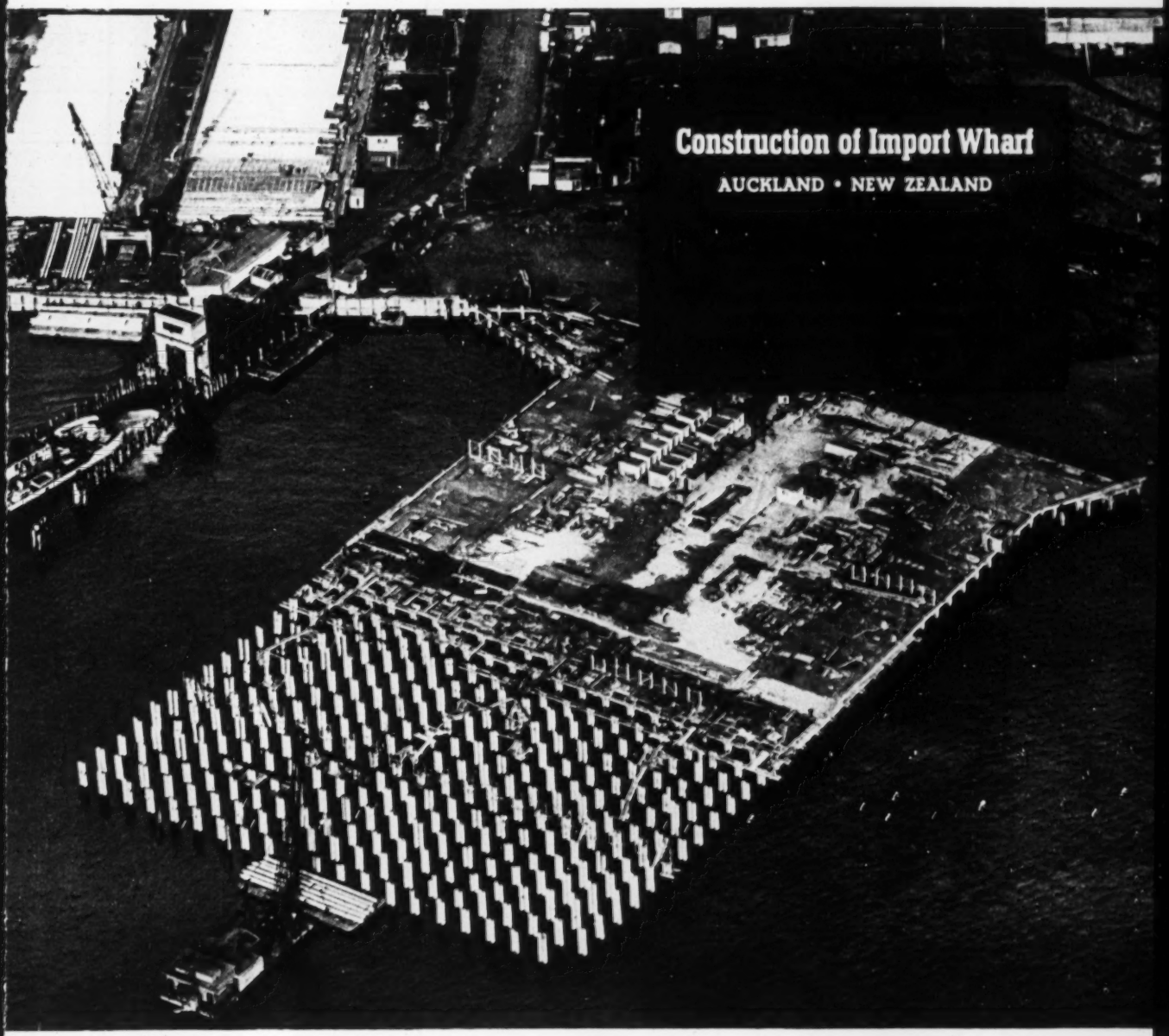

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A Raymond-supervised organization is constructing an ocean freight terminal in Auckland, which includes a large reinforced concrete pier of earthquake-resistant design, equipped with rail, warehouse and auxiliary facilities. When completed by mid-1953, the new facilities, providing berthing space for four big ocean freighters, will increase the capacity of the port by some 550,000 tons annually . . . another outstanding example of Raymond's service to the ports of the world.

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140 CEDAR STREET • NEW YORK 6, N.Y.

THE SCOPE OF RAYMOND'S ACTIVITIES . . . *FOUNDATION CONSTRUCTION* . . . *SOIL INVESTIGATIONS* . . . *IN-PLACE PIPE LINING* . . . *HARBOR AND WATERFRONT IMPROVEMENTS* . . . *SPECIALIZED CONSTRUCTION*

New Heiliner scraper travels 25 mph fully loaded . . *has 22 TIMKEN® bearings to help*

THIS is the latest model 2C500 Heiliner similar to those purchased by the U. S. Army Corps of Engineers in 1952. The unit is equipped with a 13 cubic yard scraper, and features Hydro-Steer, unobstructed visibility, and speeds up to 25 miles per hour—even when loaded!

To insure rugged dependability under the severest kinds of service, Heil uses a total of 22 Timken® bearings in the scraper's vital parts. In the differential, engine shaft and pinion, Timken bearings assure accurate gear meshing, reduce wear. That's because the tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Shafts are held in positive alignment, a smooth flow of power is insured.

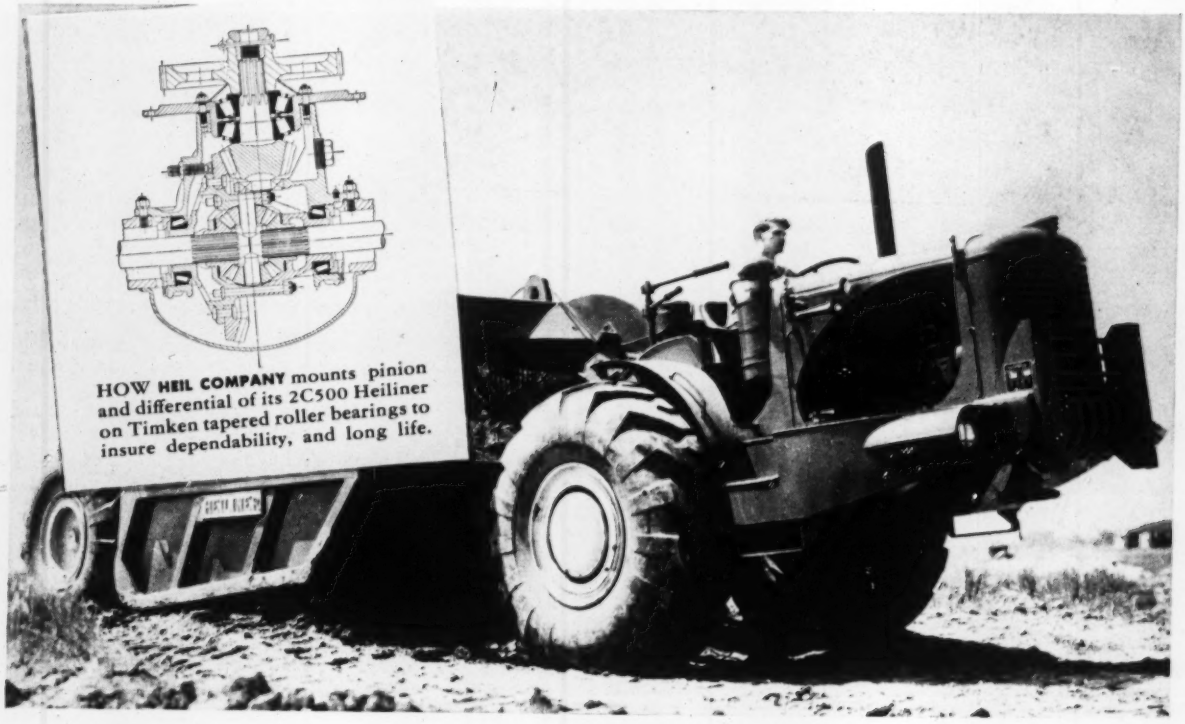
Timken bearings on the scraper wheels are more than a match for heavy shock loads. Line contact between rollers and races of Timken bearings provides load-carrying capacity to spare. Bearings are case-hardened to give them tough, shock-resistant cores and hard, wear-resistant surfaces. Timken bearings are also used in the scraper's power control unit, and hydraulic pump.

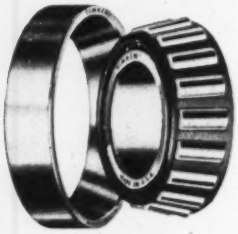
Because they keep housings and shafts concentric, Timken bearings make closures more effective. Lubricant stays in—dirt stays out.

No other bearing can give you all the advantages you get with Timken bearings. Make sure they're in the equipment you build or buy. Always look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

HOW **HEIL COMPANY** mounts pinion and differential of its 2C500 Heiliner on Timken tapered roller bearings to insure dependability, and long life.

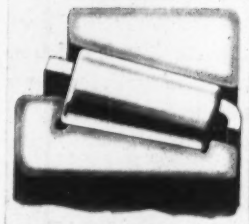




TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



HARD ON THE OUTSIDE, TOUGH ON THE INSIDE

Rollers and races of Timken bearings are case-carburized to give a hard, wear-resisting surface and a tough, shock-resisting core. Result: longer bearing life.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▷ BEARING TAKES RADIAL ↓ AND THRUST →↓← LOADS OR ANY COMBINATION